

Education (EDUC)

COURSES

EDUC 2101. EXPLORING TEACHING. 1 Hour.

An opportunity to experience a mentorship with public school students while exploring the impact Gardner's Multiple Intelligences and personality profiles play in the learning environment. Ten hours of mentorship required. Academic credit awarded. Service Learning course.

EDUC 2302. THE PROFESSIONAL EDUCATOR. 3 Hours.

This course introduces students to the teaching profession. Professionalism, ethics, learning theory and historical foundations, advocacy, and current trends and issues in education will be examined. Students will develop a personal philosophy of education. This course fulfills the University requirement for either UNIV 1101 or UNIV 1131.

EDUC 2330. STUDENT LEADER EFFECTIVENESS TRAINING. 3 Hours.

Identifies the philosophy and theories of leadership, leadership styles, and contemporary leadership issues for any student who desires to pursue their leadership education. Practical application of leadership skills are developed through interactive class discussions, analyzing case studies, and group problem-solving and role-playing experiences. Elective only and does not count as part of the professional education certification requirements.

EDUC 3301. TEACHING DIVERSE LEARNERS. 3 Hours.

A survey course that focuses on effective differentiated instruction, assessment, and management strategies for working with diverse learners to build capacity for constructing a culturally responsive learning environment. Designed to provide increased self-awareness and insight into issues of diversity. Additionally, students will examine education law and models related to diverse learners as well as strategies for working with parents and families of diverse learners. Students will evaluate multicultural context, demographics, and practices at a local school. This course requires students to spend a minimum of 20 hours a semester in a K-12 classroom.

EDUC 3333. STEM EDUCATION IN THE PK-12 CONTEXT. 3 Hours.

Methods and materials for integrated STEM teaching and learning in the PK-12 context. Emphasis on developing best practices for an integrated context that combines and makes connections between science, technology, engineering, and mathematics. This includes, but is not limited to, project and problem-based learning, real world problem solving, inquiry-based instruction, computational thinking, and engineering design. Includes field-experience in a PK-12 STEM setting.

EDUC 3390. SPECIAL TOPICS IN EDUCATION. 3 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDUC 4316. FOUNDATIONS OF EDUCATION. 3 Hours.

The course introduces students to the teaching profession. Historical foundations, professionalism, school law (including special education law), diversity in education, effective communication, family involvement, and current trends and issues in education will be examined. Students will also examine personal reasons for wanting to teach and will create a personal philosophy of education. Field observation required. (2-1).

EDUC 4318. POSITIVE CLASSROOM MANAGEMENT. 3 Hours.

A survey of effective strategies of classroom management based on contemporary research. Particular attention will be paid to creating proactive learning environments through positive behavioral interventions and supports. Outcomes students will demonstrate include: instructional management and application of positive behavioral supports, procedures of assessment for planning classroom management; understanding of functional behavior assessment, a continuum of behavioral support, and the role of behavioral strategies in instructional classroom management; and understanding classroom management systems and instructional formats.

EDUC 4319. CLASSROOM ASSESSMENT. 3 Hours.

This course will introduce students to classroom assessment strategies that are used to inform teaching. Focus will include ways to interpret standardized test results and also create and use authentic classroom-based assessments to design and deliver differentiated instruction. Data-based instructional decisions will also be introduced. Course will include a field-based component.

EDUC 4325. WOMEN IN SCIENCE. 3 Hours.

Explores the role of women in science. Emphasis on gender and science, the history of women in science, gender equity in the classroom, strategies for the retention of women scientists, the current culture/climate for women in science, and contemporary women in science. Offered as EDUC 4325, SCIE 4325, and GWSS 4325. Credit will be granted only once.

EDUC 4331. KNOWING AND LEARNING IN MATH AND SCIENCE. 3 Hours.

Restricted to students in the UTeach Arlington program. Psychological foundations of learning; problem solving in mathematics and science education utilizing technology; principles of expertise and novice understanding of subject matter; implications of high-stakes testing; and foundations of formative and summative assessment. Three lecture hours a week for one semester; additional hours may be required. Prerequisite: SCIE 1201 or SCIE 1334 or concurrent enrollment in either.

EDUC 4332. CLASSROOM INTERACTIONS. 3 Hours.

Restricted to students in the UTeach Arlington program. Principles of delivering effective instruction in various formats (lecture, lab activity, collaborative settings); examination of gender, class, race, and culture in mathematics and science education; overview of policy related to mathematics and science education. Three lecture hours a week for one semester with additional fieldwork hours to be arranged. Prerequisite: C or better in SCIE 1202 or C or better in SCIE 1334; C or better in EDUC 4331 or concurrent enrollment.

EDUC 4333. MULTIPLE TEACHING PRACTICES IN MATH AND SCIENCE. 3 Hours.

Restricted to students in the UTeach Arlington program who have earned a passing score on the preliminary portfolio. Multiple research-based teaching practices including foundations of project-based, case-based, and problem-based learning environments; principles of project-based curriculum development in mathematics and science education; classroom management and organization of inquiry-based, problem-based/project-based learning classrooms. Three lecture hours a week for one semester with additional fieldwork hours to be arranged. Prerequisite: C or better in EDUC 4332; formal admission to program.

EDUC 4340. HUMAN GROWTH AND DEVELOPMENT. 3 Hours.

Prerequisite to subsequent courses in teacher education. Physical, social, emotional, and cognitive growth patterns from conception to early adulthood, emphasizing familial, cultural, societal, and genetic determinants of behavior. Topics include developmental characteristics of children and adolescents including exceptional learners and students with special needs.

EDUC 4341. ORGANIZATION AND MANAGEMENT OF INSTRUCTION IN SECONDARY SCHOOLS. 3 Hours.

Emphasizes the importance of organizing, developing, and adapting management systems to enhance learning in classroom environments. Managing the teaching-learning process, applying a variety of assessment techniques, motivation, and adapting management styles to meet student needs. This course involves a two-hour lecture and two-hour application of lecture/theory. The two-hour application of lecture/theory will require students to spend time in a K-12 classroom during normal school hours, 8 a.m.-4 p.m., Monday-Friday.

EDUC 4342. APPLICATIONS OF INSTRUCTION IN MIDDLE/SECONDARY SCHOOL CLASSROOMS. 3 Hours.

Field-based applications of inquiry-based curriculum planning and instructional theory and methods. Includes writing and implementing unit and instructional goals and objectives, using instructional lesson models to meet teacher appraisal criteria including utilization of classroom technology and audiovisual aids, planning for individual needs, and evaluating student progress. This course involves a lecture and application of lecture/theory. The application of lecture/theory will require students to spend time in a Grades 4-12 classroom during normal school hours, Monday-Friday, for typically one day a week throughout the semester.

EDUC 4343. TEACHING SOCIAL STUDIES IN THE SECONDARY SCHOOL. 3 Hours.

Methods and materials for social studies teaching and learning at the secondary school level. Emphasis on establishing a productive classroom environment, curriculum planning, implementation of effective instructional strategies, integration of educational technologies, and assessing student learning. Includes field-experience in a social studies classroom in a local middle or high school. The application of lecture/theory will require students to spend time in a grades 7-12 social studies classroom during normal school hours, Monday-Friday, for typically one day a week throughout the semester.

EDUC 4344. TEACHING IN MIDDLE/SECONDARY SCHOOL SCIENCE CLASSROOMS. 3 Hours.

Methods and materials for inquiry-based science teaching and learning at the middle/secondary level. Emphasis on establishing a productive classroom environment, curriculum planning, implementation of effective instructional strategies, integration of educational technologies, and assessing student learning. Includes field experience in a PK-12 classroom setting.

EDUC 4345. TEACHING IN MIDDLE/SECONDARY SCHOOL MATHEMATICS CLASSROOMS. 3 Hours.

Methods and materials for inquiry-based mathematics teaching and learning at the middle/secondary level. Emphasis on establishing a productive classroom environment, curriculum planning, implementation of effective instructional strategies, integration of educational technologies, and assessing student learning. Includes field experience in a PK-12 classroom setting.

EDUC 4346. SECONDARY SCHOOL CULTURE AND THE TEACHING PROFESSION. 3 Hours.

School cultures, effective schools and teaching practices, stages of professional development, foundations of American schools, legal and ethical aspects, and societal demands on the school.

EDUC 4347. SECONDARY SCHOOL INTERNSHIP WITH TECHNOLOGY APPLICATIONS. 3 Hours.

Supervised and directed professional practice in a local secondary school. The student will be assigned to a public school site for five hours per week. Weekly seminars are required. Internship must be taken the semester prior to residency. Theory from technology will be applied during internship assignment.

EDUC 4352. TEACHING DIVERSE POPULATIONS. 3 Hours.

Effective instruction, assessment, and management strategies for working in diverse educational settings. Designed to provide increased self-awareness and insight into issues of diversity such as culture, ethnicity, exceptionality, gender, language, religion, and socioeconomic status. This course involves a two-hour lecture and two-hour application of lecture/theory. The two-hour application of lecture/theory will require students to spend time in a K-12 classroom during normal school hours, 8 a.m.-4 p.m., Monday-Friday.

EDUC 4390. SELECTED TOPICS IN EDUCATION. 3 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDUC 4391. CONFERENCE COURSE. 3 Hours.

Independent study in the preparation of a project or a paper on a research topic; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: permission of instructor.

EDUC 4647. CLINICAL TEACHING IN MIDDLE/SECONDARY SCHOOL/ALL-LEVEL CLASSROOMS. 6 Hours.

Supervised and directed clinical teaching in student's targeted area of certification. The student will be assigned full time for the Independent School District calendar. Required seminars provide students with theories/backgrounds/strategies to integrate and apply during clinical teaching. Students will apply theory and research to practice through daily teaching and interaction with students, major assignments, and data analysis of practice. Prerequisite: Office of Educational Field Experiences approval required.

EDUC 5190. SELECTED TOPICS IN EDUCATION. 1 Hour.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDUC 5191. INDEPENDENT RESEARCH. 1 Hour.

Research for thesis substitute or equivalent over a topic agreed upon between the student and instructor. May be repeated for credit with permission.

EDUC 5263. READING AND DEVELOPMENT. 2 Hours.

This course will focus on the acquisition of reading skills in the typically developing child. Sub-skills and precursors of reading such as visual and phonological processing will be examined from a neurological point of view. This foundational knowledge will then be applied to researching reading difficulties as well as the teaching and learning in the classroom for typically developing students and those with reading difficulties.

EDUC 5290. SELECTED TOPICS IN EDUCATION. 2 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDUC 5291. INDEPENDENT RESEARCH. 2 Hours.

Research for thesis substitute or equivalent over a topic agreed upon between the student and instructor. May be repeated for credit with permission.

EDUC 5305. EFFECTIVE TEACHING AND LEARNING FOR 21ST CENTURY EC-12 STUDENTS. 3 Hours.

Students gain understanding of the nature of learning and the purpose of education as the pedagogical foundation to teaching in any discipline. Students develop knowledge of state and national standards and apply these standards vertically and horizontally in preparing high quality teaching and learning experiences. Students gain experience critically analyzing disciplinary content, instructional models, lessons, curricula, and research literature. Students learn to construct and test instructional models using activities that focus attention on diversity, authentic assessments, intellectual, social and emotional development, interdisciplinary connections, and technology. Must be taken prior to EDUC 5309.

EDUC 5309. ADVANCED TEACHING MODELS FOR DIVERSE LEARNERS. 3 Hours.

Students engage in the advanced study and design of curriculum models with an understanding of cognitive development, pedagogical content knowledge (PCK), and learning progressions. Students learn in-depth analyses of how students learn and how to appropriately differentiate instruction. Students learn culturally responsive teaching practices and gain skill in developing learning experiences that attend to teaching diverse learners.

EDUC 5310. DIVERSE POPULATIONS IN TODAY'S SCHOOLS. 3 Hours.

An overview of the diverse populations in today's schools and effective instruction, assessment, and management strategies for working in diverse educational settings. Urban, suburban, and rural school communities and populations will be addressed with special attention to issues of human growth and development, culture, ethnicity, exceptionality, gender, language, religion and socioeconomic status. This course application of lecture/theory which will require students to spend a minimum of 20 hours in a K-12 classroom during normal school hours.

EDUC 5314. EFFECTIVE CLASSROOM INSTRUCTION. 3 Hours.

Designed to provide teachers with skills and competencies based on research findings on effective teaching and instruction related to promoting student academic achievement. Includes identifying, developing, and practicing instructional variables that affect teacher performance and student learning tasks. Includes field-experience in a local middle or high school based on teacher candidate's certification program. The application of lecture/theory will require candidates to spend time in a grades 7-12 classroom during normal school hours, Monday-Friday.

EDUC 5315. CLINICAL TEACHING. 3 Hours.

Supervised clinical teaching in candidate's area of certification. Candidates will be assigned full-time according to school district calendar. Required seminars provide candidates with theory to integrate and apply during clinical teaching. This experience will help candidates apply theory and research to practice through daily teaching and interaction with students, major assignments, and data analysis.

EDUC 5321. EDUCATIONAL RESEARCH. 3 Hours.

Examination of basic concepts and procedures necessary for empirical research investigations within classroom contexts, experimental design, data collection and interpretation, and statistical analysis.

EDUC 5322. EDUCATIONAL RESEARCH AND EVALUATION. 3 Hours.

An overview of basic concepts and procedures necessary for analyzing, designing, and conducting quantitative and qualitative educational studies. A focus on educational research, including empirical research, investigations data collection and interpretation, and statistical analysis. Also, a focus on educational evaluation including accreditation, personnel appraisal, and educational programs and materials.

EDUC 5329. CLASSROOM MANAGEMENT AND DISCIPLINE. 3 Hours.

Analysis of the variables that affect teacher and student behavior in the classroom. Survey of effective strategies of classroom management and discipline based on contemporary research. Particular attention to individual student differences in settings such as gifted and talented, handicapped, and learning disabled.

EDUC 5330. LEADERSHIP IN THE INSTRUCTIONAL SETTING. 3 Hours.

Examination of current research on effective instructional organizations and classroom instruction in today's schools, on characteristics of school leadership, and on the role and function of the teacher as instructional leader. Topics include the essential components of instruction, developing instructional-management systems, evaluating student and teacher performance, assisting colleagues to monitor and improve instructional skills, school climate and leadership styles as they impact on school improvement.

EDUC 5358. THEMATIC SCIENCE FOR ELEMENTARY AND SECONDARY TEACHERS. 3 Hours.

Professional development program for elementary and secondary science teachers who will examine a variety of instructional strategies. The course will provide a broad spectrum of content from all areas of science and provide opportunities to participate in investigations, field trips and seminars. The course will facilitate the implementation of a thematic science curriculum in elementary and secondary schools through research-based practices.

EDUC 5359. ENVIRONMENTAL SCIENCE FOR ELEMENTARY AND SECONDARY TEACHERS. 3 Hours.

Designed for elementary, middle and high school teachers who will examine a variety of environmental education issues and instructional strategies for classroom and outdoor settings. The course will provide a broad spectrum of content from all areas of science and will provide opportunities to participate in field trips, science investigations and seminar sessions. It will facilitate the implementation of an environmentally based curriculum in schools using best practices.

EDUC 5360. INTRODUCTION TO MIND, BRAIN, AND EDUCATION. 3 Hours.

Students will explore central themes and issues in the field of learning sciences, which incorporates cognitive and educational psychology, along with neuroscience, to help educators teach better and students learn better. This course also offers a number of exercises to help students become researchers as well as consumers of research.

EDUC 5361. INTRODUCTION TO EDUCATIONAL NEUROSCIENCE. 3 Hours.

This course is designed to provide an introduction to foundational areas of neuroscience such as brain anatomy and brain mapping techniques and its applications to education. Students will study different viewpoints of links between education and neuroscience and develop their own notions of what educational questions might be answered with brain-based techniques.

EDUC 5362. THE NEUROSCIENCE OF TYPICAL & ATYPICAL LANGUAGE DEVELOPMENT. 3 Hours.

This course will examine the many levels of language including phonetics, phonology, semantics, syntax and pragmatics from both functional and neuroscientific perspectives. This will be closely tied to language acquisition and early language development. The focus on the pre-reading years will provide a solid basis for further study of literacy-related skills and overall learning. Sub-skills and precursors of reading will be examined from a neurological point of view and applied to researching reading difficulties as well as the teaching and learning in the classroom. Course offered as EDUC 5362 and SPED 5309; co-list credit will be granted only as one.

EDUC 5363. THE NEUROSCIENCE OF TYPICAL & ATYPICAL DEVELOPMENT OF MATHEMATICAL AND REASONING ABILITY. 3 Hours.

The course focuses on the development of problem-solving, logical, numeracy, and mathematical skills from a cognitive neurocognitive perspective. Woven throughout the course is attention to cognitive biases in scientific thinking. Two prominent features of the course include neuroplasticity as a result of organic and environmental pressures and brain-based disorders (dyscalculia, ADHD, autism) and adaptive strategies.

EDUC 5364. EPISTEMOLOGY AND NEUROSCIENCE. 3 Hours.

Students will explore the basic principles of reasoning and knowledge construction as well as their psychological and neurobiological underpinnings. Students compare and contrast the deductive and inductive methods used in decision-making and belief-forming processes. The course also highlights the role of the frontal cortex and limbic system in how learners address and resolve questions and challenges in varying contexts. The goal of the course is to offer students the theoretical structures and critical strategies necessary for assessing their own work toward the completion of the capstone project as well as for analyzing the outcomes it generates. The skills acquired in this course are widely transferrable and can help the student to become a better consumer and producer of pedagogical and scientific research.

EDUC 5365. THEORETICAL AND CONCEPTUAL MODELS IN MIND, BRAIN, AND EDUCATION. 3 Hours.

This course is designed to help students connect cognitive science to instructional practice. Students examine the roles that cognitive models play in learning and in designing lessons and curricula. The cognitive models in this course are used to provide a framework for recognizing possible strategies for improving or re-designing curricula, as well as build lessons or interventions that fit their working context. Students are expected to take part in a prototype curriculum, analyze how it was constructed and to use their insights to build a modest curriculum over the course of the semester.

EDUC 5366. EVALUATING AND DEBUNKING EDUCATIONAL INTERVENTIONS. 3 Hours.

This course focuses on making sense of the impact of interactions between educational variables in complex systems like classrooms and schools. Being able to predict outcomes in dynamic environments requires understanding that the variables themselves can change as a result of interacting with each other, which influences how we understand systems from neural networks to school districts. The general sense of the course will be to understand certain behaviors/characteristics of dynamic systems from the examination and analysis of exemplars from multiple domains. We also examine how areas of the brain demonstrate these characteristics and use them to implement certain functionalities, and in turn examine the implications of these functionalities on curriculum and instruction.

EDUC 5367. RESEARCH METHODS IN MIND, BRAIN, AND EDUCATION. 3 Hours.

This course presents an overview of the process of scientific inquiry, while fostering an understanding of research paradigms used by researchers in MBE. The primary course goals are to support students in developing a framework for their capstone project in MBE, and help them identify the research tools and methods necessary to carry out the capstone project. To support this work students analyze research from MBE as well as the wider literature to identify relevant tools, techniques and methodologies. As students develop expertise with the tools and techniques that are relevant to their capstone project they are expected to share that knowledge with their peers.

EDUC 5368. CONDUCTING RESEARCH IN MIND, BRAIN, AND EDUCATION. 3 Hours.

The goal of this course is to help students in the Mind, Brain and Education program complete their capstone project. Students work collaboratively with fellow students and with faculty oversight to prepare a poster presentation that summarizes their capstone work, as well as choose a local, national or international conference to present their work.

EDUC 5370. INTRODUCTION TO GIFTED AND TALENTED CHILDREN. 3 Hours.

Psychological characteristics of gifted and talented children. Introduction to identification techniques, educational programs, instructional approaches, and special problems.

EDUC 5371. MEASUREMENT AND ASSESSMENT OF GIFTED AND TALENTED CHILDREN. 3 Hours.

Tests, formal and informal measures, and systems for identification and selection of the gifted and talented student. Basic test construction theory, test interpretation, and test uses.

EDUC 5372. METHODS, MATERIALS, AND CURRICULUM FOR THE GIFTED AND TALENTED. 3 Hours.

Curriculum theory and curriculum design for the gifted student. Methodology for implementing practical and theoretical objectives for gifted instruction.

EDUC 5373. CREATIVITY: THEORIES, MODELS, AND APPLICATION. 3 Hours.

The concept of and current research on creativity, the nature and assessment of creative thinking, as well as methods of fostering creativity.

EDUC 5374. PRACTICUM. 3 Hours.

Participation in a gifted and talented setting supervised by a university and/or school district representative. A wide range of practical experiences will be emphasized. Graded P/F/R.

EDUC 5380. DIVERSITY IN EDUCATIONAL SETTINGS. 3 Hours.

Effective leadership, instruction, and management strategies for work in diverse educational settings. Designed to provide increased self-awareness and insight into issues of diversity such as culture, ethnicity, exceptionality, gender, language, religion, and socioeconomic status. Demographic issues along with urban and suburban educational settings will also be addressed.

EDUC 5390. SELECTED TOPICS IN EDUCATION. 3 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDUC 5391. INDEPENDENT RESEARCH. 3 Hours.

Research for thesis substitute or equivalent over a topic agreed upon between the student and instructor. May be repeated for credit with permission.

EDUC 5394. UNDERSTANDING AND DESIGNING CLASSROOM RESEARCH. 3 Hours.

In this introductory course, students learn about different types of educational research methods and study designs that can be applied to real-world settings. Furthermore, students learn about how to write measurable research questions, ethically collect data, and be introduced to qualitative, quantitative, and mixed methods study designs. At the conclusion of this course, students should be able to understand the basics of educational research to determine whether it would be appropriate for implementation in a real-world authentic setting. This course is to be taken after at least 3 hours of graduate course work and preceding EDUC 5397 or EDUC 5368.

EDUC 5395. DESIGNING CLASSROOM RESEARCH. 3 Hours.

In this course, students will develop their own classroom educational research project. Their designed study will be based in the literature in their educational field and focus on classroom research questions and problems that will inform teaching practices. In this course, students will develop an individual research problem statement, argue the significance of the problem, complete a written literature review and logical chain of reasoning related to the stated problem, write specific research questions to investigate the problem in educational settings, and design a research study (methodology) that will effectively investigate their research questions. Students design a research study that shows promise for improving education, written as the first three chapters of a scholarly classroom action research project. Prerequisite: EDUC 5394. For M.Ed.T. students, this course is to be taken in the final semester of the masters' degree program. For M.Ed. students, this course is to be taken in the semester just prior to the final semester of the masters' degree program, and in the semester immediately preceding EDUC 5397.

EDUC 5396. EEG Laboratory and Experimental Design. 3 Hours.

This course is an introduction to EEG technique, covering experimental design, recording, analysis, and interpretation of brainwaves.

EDUC 5397. IMPLEMENTING AND DISSEMINATING CLASSROOM RESEARCH. 3 Hours.

In this advanced course, students will build on the knowledge gained in EDUC 5394/EDUC 5367 to specifically focus on how to collect, analyze, and interpret different types of data grounded in a variety of educational research methods. This course is split into three sections focusing on quantitative data analyses/interpretations (e.g., correlations, t-tests, and regressions), qualitative data analyses/interpretations (e.g., thematic analysis, content analysis, and summative analysis), and mixed methods analyses/interpretations. At the conclusion of this course, students should be able to collect, analyze, and interpret different types of data commonly used in educational classrooms to make data driven decisions. Prerequisite: EDUC 5394 or EDUC 5367.

EDUC 5398. THESIS. 3 Hours.

Requires an individual research project in the individual's area of concentration. Graded "R" (Research) or "P" (Pass) or "F" (Fail) only. Prerequisite: Permission of Graduate Advisor required.

EDUC 5600. COUNSELING STUDENTS IN SCHOOLS. 6 Hours.

The focus of this capstone course will be individual and group counseling theories and techniques for pre k-12 students in an educational setting. Special techniques are included for substance abuse, and for using group play therapy. Knowledge of Diagnostic and Statistical Manual of Mental Disorders, 4th. Edition (DSM IV) will be covered for purposes of diagnosis and for outside referral when necessary. Three hours in a supervised counseling practicum in area schools or with school children will be required.

EDUC 5698. THESIS. 6 Hours.

Requires an individual research project in the individual's area of concentration. Graded "R" (Research) or "P" (Pass) or "F" (Fail) only. Prerequisite: Permission of Graduate Advisor required.