Master of Science in Computer Engineering

About This Program

The purpose of the graduate program in Computer Engineering is to facilitate the student's continued professional and scholarly development. The Master of Science in Computer Engineering is designed to extend the student's knowledge and emphasize a particular area of concentration.

The thesis option is designed to develop the scholarship and research skills of the student. It requires 30 credit hours of which six are thesis credits. The non-thesis option provides professional development to students with an engineering baccalaureate degree. This option is intended to serve the needs of students who, through their work, have experience doing projects but who do not wish to do a thesis. It requires 36 credit hours.

Competencies

1. Upon graduation, students will be able to identify, formulate, and solve complex engineering problems in computer systems by applying computer engineering principles.
2. Upon graduation, students will be able to apply computer engineering design to build and analyze combined hardware and software systems that meet specified needs of real-world tasks and applications.
3. Upon graduation, students will be able to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

Admissions Criteria

The CSE graduate admissions committee bases its admission decision on the following criteria (in no specific order):

- An undergraduate degree, preferably in an area related to computer science, computer engineering, or software engineering.
- An overall GPA of 3.0 or higher in undergraduate coursework.
- A 3.2 grade point average (on a 4.0 scale) on the last two years of undergraduate coursework. In particular, performance on Computer Science/ Computer Engineering/Software Engineering related courses are emphasized.
- Relevance of the student’s degree (background) to the CSE curriculum.
- Rigor of the student’s Bachelor’s degree. A three-year degree is not considered rigorous. Note: International applicants with a “3+2” Master’s degree will be evaluated as equivalent to a 4-year Bachelor’s degree.
- Reputation of the University/College from which the student has received his/her previous degrees.
- A sum of verbal plus quantitative scores of at least 305 on the GRE. Additionally:
  - GRE quantitative score of at least 160
  - GRE verbal score of at least 145
  - The department does not require the advanced computer science test. A passing score on the Engineering in-Training (EIT) exam is also given consideration for admission decisions.
- Students may be accepted with a GRE score of 300, but may be required to complete additional coursework for their MS degree (see degree requirements found later in this document). In this case:
  - GRE quantitative score of at least 155
  - GRE verbal score of at least 145
- Students may also be accepted with up to three deficiency courses, but may be required to do additional coursework for their MS degree (see degree requirements found later in this document).
- International Applicants will need to take the Test of English as a Foreign Language (TOEFL) and score at least 83 with no area score of less than 20, or take the International English Language Testing System (IELTS) and score at least 6.5 in all areas.

Note:

- Applications with significant mathematics deficiencies may be deferred/denied pending completion of the required courses.
- We neither require nor review letters of recommendation or a statements of purpose from MS applicants.
- Students with (or completing in the near future) a BS awarded by the CSE department at UTA or a comparable degree from another accredited U.S. university who have a GPA of at least 3.2 should contact the graduate advisor regarding a GRE waiver. UTA CSE students with a GPA of at least 3.5 should contact the graduate advisor regarding nomination for Advanced Admission (i.e. admission without application and fee). Baseline criteria for GRE waiver and Advanced Admission are established by the Graduate Dean and can be found in the current version of the UTA Graduate Catalog.

UNCONDITIONAL ADMISSION

Applies to an applicant who meets the first six criteria above to a degree satisfactory to the graduate admissions committee.

PROBATIONARY ADMISSION

Applies to an applicant who meets at least five of the six criteria to a degree satisfactory to the graduate admissions committee and whose record shows promise for success in the program or to an applicant who does not fulfill all the deficiency course requirements.

DENIAL OF ADMISSION

Applies to an applicant who does not meet five of the first six criteria to a degree satisfactory to the graduate admissions committee.

WAIVER OF GRADUATE RECORD EXAMINATION

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

- The student must have graduated from a commensurate bachelor's degree program at UT Arlington no more than three academic years prior to admission to the graduate program (as measured from the start of the semester for which admission is sought). A commensurate bachelor's degree program is one that is a normal feeder program for the master's degree program to which the student seeks admission. Undergraduate students in their final year of study are also eligible; in such cases, admission with the GRE waiver is contingent upon successful completion of the bachelor's degree.
  - as calculated for admission to the Graduate School ;
  - overall;
  - in the major field; and
  - in all upper-division work.
- The student's UT Arlington grade-point average must equal or exceed 3.0 in the following calculations:

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

Additionally, some programs may waive the GRE requirement for non-UT Arlington graduates who seek admission as a master's student and meet qualifications listed in those programs' specific admission requirements. Such waivers are not offered by all graduate programs.

Curriculum

Foundation/Leveling Courses		
Might be required to address deficiencies.		
CSE 5400	FUNDAMENTALS OF EMBEDDED SYSTEMS [1]	
CSE 5401	FUNDAMENTALS OF DIGITAL SYSTEMS [1]	
MS CpE Foundation (Core Courses)		**6**
Choose two of the following:		
CSE 5301	DATA ANALYSIS & MODELING TECHNIQUES	
CSE 5306	DISTRIBUTED SYSTEMS	
CSE 5311	DESIGN AND ANALYSIS OF ALGORITHMS	
CSE 5317	DESIGN AND CONSTRUCTION OF COMPILERS	
CSE 5342	EMBEDDED SYSTEMS II	
CSE 5350	COMPUTER ARCHITECTURE II	
CSE 5351	PARALLEL PROCESSING	
CSE 5357	ADVANCED DIGITAL LOGIC DESIGN	
Core Specialty Area		
Choose three courses from one of the following two core specialty areas, one of which must be 6000-level		9
Systems & Architecture: [2]		
CSE 5306	DISTRIBUTED SYSTEMS	
CSE 5317	DESIGN AND CONSTRUCTION OF COMPILERS	
CSE 5333	CLOUD COMPUTING	
CSE 5348	MULTIMEDIA SYSTEMS	
CSE 5350	COMPUTER ARCHITECTURE II	
CSE 5351	PARALLEL PROCESSING	
CSE 5358	MICROPROCESSOR SYSTEMS	

CSE 5359	SPECIAL TOPICS IN COMPUTER ENGINEERING	
CSE 5372	RISC PROCESSOR DESIGN	
CSE 5373	GENERAL PURPOSE GPU ARCHITECTURE	
CSE 5383	INTRODUCTION TO UNMANNED VEHICLE SYSTEMS	
CSE 5384	UNMANNED VEHICLE SYSTEM DEVELOPMENT	
CSE 6306	ADVANCED TOPICS IN OPERATING SYSTEMS	
CSE 6350	ADVANCED TOPICS IN COMPUTER ARCHITECTURE	
CSE 6351	ADVANCED TOPICS IN COMPUTER ENGINEERING	
CSE 6352	FAULT TOLERANT SYSTEMS	
CSE 6353	COMPUTER ENGINEERING SYSTEM DESIGN	
CSE 6359	ADVANCED TOPICS IN SYSTEMS & ARCHITECTURE	
Embedded Systems: [2]		
CSE 5342	EMBEDDED SYSTEMS II	
CSE 5352	IoT AND NETWORKING	
CSE 5354	REAL-TIME OPERATING SYSTEMS	
CSE 5355	ELECTROMECHANICAL SYSTEMS AND SENSORS	
CSE 5356	SYSTEM ON CHIP (SoC) DESIGN	
CSE 5357	ADVANCED DIGITAL LOGIC DESIGN	
CSE 5358	MICROPROCESSOR SYSTEMS	
CSE 5372	RISC PROCESSOR DESIGN	
CSE 5373	GENERAL PURPOSE GPU ARCHITECTURE	
CSE 6351	ADVANCED TOPICS IN COMPUTER ENGINEERING	
CSE 6353	COMPUTER ENGINEERING SYSTEM DESIGN	
Breadth Courses		
Select two CSE courses (5000 or 6000 level). Breadth courses cannot be from any otherwise selected specialty area, nor can they be from the same specialty area as each other. [3]		6
Completion Options		**9-15**
Select one of the following completion options.		
Non-Thesis		15
Select three courses from a second specialty area, including core areas above and the auxiliary areas listed below, one of which must be 6000-level		
BigData/Databases: [2]		
CSE 5330	DATABASE SYSTEMS	
CSE 5331	DBMS MODELS AND IMPLEMENTATION TECHNIQUES	
CSE 5333	CLOUD COMPUTING	
CSE 5334	DATA MINING	
CSE 5335	WEB DATA MANAGEMENT	
CSE 5339	SPECIAL TOPICS IN DATABASE SYSTEMS	
CSE 5362	SOCIAL NETWORKS AND SEARCH ENGINES	
CSE 6331	ADVANCED TOPICS IN DATABASE SYSTEMS	
CSE 6339	SPECIAL TOPICS IN ADVANCED DATABASE SYSTEMS	
CSE 6363	MACHINE LEARNING	
Imaging/Bioinformatics [2]		
CSE 5348	MULTIMEDIA SYSTEMS	
CSE 5365	COMPUTER GRAPHICS	
CSE 5370	BIOINFORMATICS	
CSE 5379	SPECIAL TOPICS IN BIOINFORMATICS	
CSE 5389	SPECIAL TOPICS IN MULTIMEDIA, GRAPHICS, & IMAGE PROCESSING	
CSE 6366	DIGITAL IMAGE PROCESSING	
CSE 6367	COMPUTER VISION	
CSE 6379	SPECIAL TOPICS IN ADVANCED BIOINFORMATICS	
CSE 6389	SPECIAL TOPICS IN ADVANCED MULTIMEDIA, GRAPHICS, & IMAGE PROCESSING	

Intelligent Systems/Robotics: [2]	
CSE 5334	DATA MINING
CSE 5355	ELECTROMECHANICAL SYSTEMS AND SENSORS
CSE 5360	ARTIFICIAL INTELLIGENCE I
CSE 5361	ARTIFICIAL INTELLIGENCE II
CSE 5362	SOCIAL NETWORKS AND SEARCH ENGINES
CSE 5364	ROBOTICS
CSE 5367	PATTERN RECOGNITION
CSE 5368	NEURAL NETWORKS
CSE 5369	SPECIAL TOPICS IN INTELLIGENT SYSTEMS
CSE 5383	INTRODUCTION TO UNMANNED VEHICLE SYSTEMS
CSE 5384	UNMANNED VEHICLE SYSTEM DEVELOPMENT
CSE 6363	MACHINE LEARNING
CSE 6366	DIGITAL IMAGE PROCESSING
CSE 6367	COMPUTER VISION
CSE 6369	SPECIAL TOPICS ADVANCED INTELLIGENT SYSTEMS
Networks/IoT/Communications:	
CSE 5345	FUNDAMENTALS OF WIRELESS NETWORKS
CSE 5346	NETWORKS II
CSE 5347	FUNDAMENTALS OF BLOCKCHAIN & CRYPTOCURRENCY TECHNOLOGIES
CSE 5349	SPECIAL TOPICS IN NETWORKING
CSE 5352	IoT AND NETWORKING
CSE 5376	DIGITAL COMMUNICATION SYSTEMS
CSE 5377	WIRELESS COMMUNICATION SYSTEMS
CSE 6344	ADVANCED TOPICS IN COMMUNICATION NETWORKS
CSE 6345	PERVASIVE COMPUTING & COMMUNICATIONS
CSE 6347	ADVANCED WIRELESS NETWORKS & MOBILE COMPUTING
CSE 6348	EMBEDDED SYSTEM NETWORKING
CSE 6349	SPECIAL TOPICS IN ADVANCED NETWORKING
Security/Privacy: [2]	
CSE 5380	INFORMATION SECURITY 1
CSE 5381	INFORMATION SECURITY 2
CSE 5382	SECURE PROGRAMMING
CSE 5388	SPECIAL TOPICS IN INFORMATION SECURITY
CSE 6388	SPECIAL TOPICS IN ADVANCED INFORMATION SECURITY
Software Engineering [2]	
CSE 5320	SPECIAL TOPICS IN SOFTWARE ENGINEERING
CSE 5321	SOFTWARE TESTING
CSE 5322	SOFTWARE DESIGN PATTERNS
CSE 5323	SOFTWARE ENGINEERING PROCESSES
CSE 5324	SOFTWARE ENGINEERING: ANALYSIS, DESIGN, AND TESTING
CSE 5325	SOFTWARE ENGINEERING: MANAGEMENT, MAINTENANCE, AND QUALITY ASSURANCE
CSE 5326	REAL-TIME SOFTWARE DESIGN
CSE 5327	TELECOMMUNICATIONS SOFTWARE DEVELOPMENT
CSE 5328	SOFTWARE ENGINEERING TEAM PROJECT I
CSE 5329	SOFTWARE ENGINEERING TEAM PROJECT II
CSE 5382	SECURE PROGRAMMING
CSE 6323	AGILE SOFTWARE DEVELOPMENT
CSE 6324	ADVANCED TOPICS IN SOFTWARE ENGINEERING
CSE 6329	SPECIAL TOPICS IN ADVANCED SOFTWARE ENGINEERING
Data Analytics/Algorithms/Theory: [2]	
CSE 5301	DATA ANALYSIS & MODELING TECHNIQUES

CSE 5307	PROGRAMMING LANGUAGE CONCEPTS	
CSE 5311	DESIGN AND ANALYSIS OF ALGORITHMS	
CSE 5314	COMPUTATIONAL COMPLEXITY	
CSE 5315	NUMERICAL METHODS	
CSE 5316	MODELING, ANALYSIS, AND SIMULATION OF COMPUTER SYSTEMS	
CSE 5317	DESIGN AND CONSTRUCTION OF COMPILERS	
CSE 5318	APPLIED GRAPH THEORY AND COMBINATORICS	
CSE 5319	SPECIAL TOPICS IN THEORY & ALGORITHMS	
CSE 6311	ADVANCED COMPUTATIONAL MODELS AND ALGORITHMS	
CSE 6314	ADVANCED TOPICS IN THEORETICAL COMPUTER SCIENCE	
CSE 6319	SPECIAL TOPICS IN ADVANCED THEORY AND ALGORITHMS	
Select two 5000/6000 level CSE courses excluding CSE 5391 & CSE 5393		
Thesis		9
Select one 5000/6000 level from CSE or a related program		
Select 6 hours from the following:		
CSE 5398	MASTER'S THESIS I	
CSE 5698	MASTER'S THESIS II	
Total Hours		**30-36**

[1] This is a leveling course that will be assigned to any CpE students who are missing foundation course(s) from their undergraduate degree. This course is designed to ensure that all CpE students have the necessary computer hardware background required to be successful in the CpE program. This course can be used as an elective.

[2] Specialty Area courses and course offerings are subject to change.

Program Completion

1. Only courses with earned grades of C or better can be used to satisfy degree requirements. No graduate level course in which the final grade was D or F may be used to satisfy a degree requirement. Courses in which a student earned a C, D, or F might be eligible for grade forgiveness under the Graduate Grade Forgiveness policy found in the UTA catalog.
2. Students must maintain a cumulative and major GPA of at least 3.0 in all coursework.
3. Grades in all courses count in the student's UTA cumulative GPA unless a course is repeated and grade forgiveness is applied.

Advising Resources

Graduate students should consult a graduate advisor as needed

Location:

Engineering Research Building 6th Floor

Email:

csegradadvising@uta.edu

Phone:

N/A

Web:

Graduate Advising (https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/cse/students/graduate-advising/)