

PH.D. IN ELECTRICAL AND COMPUTER ENGINEERING

The Ph.D. degree is designed so that it:

- offers students the theoretical, practical, and professional knowledge that will enable them to pursue discovery of new knowledge;
- allows students to conduct visible high-quality research that will advance the state of knowledge; and
- serves to train, motivate, and inspire our graduates to become leaders in their fields.

Admission Requirements

The minimum GRE requirement is 310 (verbal plus quantitative) for the B.S. to Ph.D. track, and 305 for the M.S. to Ph.D. track. Other requirements are identical to the CoE requirements. The transfer policy complies with the rules of the graduate school.

Curriculum Requirements

PhD in Electrical and Computer Engineering

FOR STUDENTS WITH ONLY A B.S. DEGREE IN ENGINEERING

Code	Title	Credit Hours
ECE or Other Approved Electives		27-33
At least 50% of electives must be in ECE		
Seminar Series		6
ECE 703	Graduate Research Seminar (New Course: Graduate Research Seminar)	
Teaching Requirement		3
ECE 704	Graduate Teaching (New Course: Graduate Teaching)	
Dissertation		30-36
ECE 830	Pre-Candidacy Doctoral Dissertation	
ECE 840	Post-Candidacy Doctoral Dissertation	
ECE 850	Research in Residence	
Total Credit Hours		72

PhD in Electrical and Computer Engineering

FOR STUDENTS WITH A M.S. DEGREE IN ENGINEERING*

*Assuming 12 graduate credit hours are approved to count toward the doctoral program

Code	Title	Credit Hours
ECE or Other Approved Electives		15-21
At least 50% of electives must be in ECE		
Seminar Series		6
ECE 703	Graduate Research Seminar (New Course: Graduate Research Seminar)	
Teaching Requirement		3
ECE 704	Graduate Teaching (New Course: Graduate Teaching)	
Dissertation		30-36
ECE 830	Pre-Candidacy Doctoral Dissertation	
ECE 840	Post-Candidacy Doctoral Dissertation	
ECE 850	Research in Residence	
Total Credit Hours		60

Graduation Requirements

The average grade of course works should be B or better, and no grade can be below C. Other requirements are identical to the CoE requirements.

Qualifying Examination

The Ph.D. Qualifying Examination is held twice a year, one week prior to the beginning of the Fall and Spring semesters. The applicant must select four subject areas listed in the following:

Computer Engineering (CE) Program

CE1 Programming Languages and Algorithms
CE2 Computer Networks
CE3 Computer Architecture and Digital Systems
CE4 Database and Distributed Systems
CE5 Analytical Techniques

Electrical Engineering (EE) Program
EE1 Signals and Systems
EE2 Communications
EE3 Circuits and Electronics
EE4 Solid-State Physics and Devices
EE5 Analytical Techniques

The criteria for subject selection are as follows:

- Select the PROGRAM (CE or EE) (in consultation with Research Advisor).
- Select FOUR subjects as follows:
 - THREE from the selected PROGRAM
 - ONE from the other PROGRAM

Subject matter in CE5 and EE5 are identical, and both CE5 and EE5 cannot be selected in one sitting.

Requirements for satisfactory completion of the Ph.D. qualifying examination are:

- Taking the Ph.D. Qualifying Examination:
 - The first attempt must be within two semesters (summers excluded) of initial enrollment in the Ph.D. program.
 - Any student failing to pass the examination during the first attempt, can retake the examination a second time during its immediate next offering (see Passing the Ph.D. Qualifying Examination section below).
 - Any student failing to pass the examination a second time will have his/her Ph.D. status terminated.
- Passing the Ph.D. Qualifying Examination: To pass the examination, a student's grades must satisfy the following criteria:
 - Criterion 1: Average grade of "B" (3.000) or better for the entire 4-subject examination: a student failing to meet this criterion will be required to repeat the whole examination during its immediate next offering. The student may change the subject areas selected.
 - Criterion 2: Grade of "C" (2.000) or better for each subject: each subject failing to meet this criterion will have to be repeated during the immediate next offering of the Ph.D. Qualifying Examination. No change in the subject area is allowed and the average grade computed with the re-taken subject together with the remaining subject areas previously taken must satisfy Criteria 1 and 2 to successfully pass the examination.

Dissertation Committee

The dissertation committee should comprise at least 5 members: the Chair of the committee is the Research Advisor who must be a member of the Graduate Faculty; at least two other members (excluding the Research Advisor) must be ECE faculty members as well as members of the Graduate Faculty; at least one member must be from outside ECE.

Dissertation Proposal Defense

An oral defense of a dissertation proposal on an original research topic before the dissertation committee is required.

Admission to Candidacy

Requirements are identical to the CoE requirements.

Mission

Provide outstanding graduate educational programs to students in electrical engineering, and computer engineering. Conduct visible high-quality research programs that will advance the state of knowledge in the fields of electrical engineering and computer engineering and will serve to train, motivate and inspire our graduates to become leaders in their fields.

Goals

Graduates of the Ph.D. program will have the theoretical, practical, and professional knowledge that will enable them to independently pursue the discovery of new knowledge and methods that enhance the theory and practice of electrical engineering and computer engineering. Graduates will be qualified for entry-level academic positions, or research positions in industrial and government research institutions and laboratories.

Student Learning Outcomes

- Students will demonstrate advanced understanding of a broader range of subject areas and expertise in their research work that will allow them to be at a vanguard position when entering the workforce, in either academic or industrial/government careers.
- Students will demonstrate an established record of original and independent research contributions.
- Students will demonstrate ability to communicate the results of their technical both in writing and in oral presentations.