ELECTRICAL ENGINEERING PH.D.

All students must meet the Requirements for the Doctor of Philosophy Degree

OVERVIEW

Master of Science and Doctor of Philosophy in Electrical Engineering programs are offered. Typically candidates have obtained the Bachelor of Science degree in Electrical Engineering prior to application but other applicants are encouraged to consider the program if they have extensive background in mathematics and the basic sciences. In such cases, it may be necessary for a student to complete the entrance qualifications without receiving credit toward graduate studies. The general requirements for admission as outlined under the Regulations of the Graduate College must be met. Areas of research expertise are biomedical engineering, computer engineering, solid state physical electronics, power and energy systems, electro-optics, information processing, communication-theory, semiconductor materials, devices, and integrated-circuits (VLSI).

SPECIFIC REQUIREMENTS

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

A master’s degree in electrical engineering or the equivalent and completion of the general (aptitude) portion of the Graduate Record Examination (GRE).

Minimum Degree Requirements for the Degree of Doctor of Philosophy

At least forty-five credits in courses and seminars and twenty credits in dissertation. Four courses are to be chosen from a major area of concentration and two from a minor. The requirements specified under the Policies of the Graduate College must also be met. A total of seventy-five credits is required.

Comprehensive Examination

In order to be advanced to candidacy for the Doctor of Philosophy in Electrical Engineering, a Ph.D. Program Student is required to pass a Comprehensive Examination. Part I of this examination is generally taken after three semesters of Ph.D. study, and after completing the EE core requirement (EE 301 and EE 302 or their equivalent). Part II is generally taken near the end of four semesters of Ph.D. study.

Part I of the Comprehensive Examination is administered by the EE Graduate Program Committee, is both written and oral, and normally takes six to eight hours for completion for the written portion and one and a half hours for the oral portion. Part I of the Comprehensive Examination is based on core material from the EE core courses (EE 301 and EE 302 or their equivalent) as well as prerequisite material from Linear Circuit Analysis (EE 3 & 4), Signals & Systems (EE 171), and mathematics at the level of Math 124 & Math 271, and is generally offered annually in either December or January.

A passing grade for the Part I Comprehensive Examination is required for each of the two parts (EE 301 and EE 302) individually as well as a successful oral presentation. For the written portion, a passing grade consists of an average score of 70% or higher. A score of lower than 65% is a failing grade. An intermediate score is considered passing if approved by a two-thirds majority of the EE graduate program faculty.

Part II of the Comprehensive Examination is focused on the student’s research area and assesses whether or not the student is capable of performing independent research at the doctoral level. It consists of an oral presentation (<30 minutes) and time for faculty questions (~30 minutes). The presentation should include a clear statement of the problem that the student is researching (1 to 2 slides), a review of the most important literature related to this problem (~15 min), and a presentation of the student’s research methods and results to date (~15 min). This presentation should be scheduled near the end of the student’s fourth semester (April-May), and is open to all members of the EE graduate program faculty.

On the first try, the examination committee will award students one of the following three outcomes to the exam:

1. Pass at the Ph.D. level.
2. Pass at the M.S. level with opportunity for at most one retake (to try for a Ph.D. level pass)
3. Fail with opportunity for at most one retake.

If a student retakes the comprehensive exam, the examination committee will award students one of the following three outcomes to the retake:

1. Pass at the Ph.D. level
2. Pass at the M.S. level without further opportunity to retake at the Ph.D. level
3. Fail and dismissal from the graduate program

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

Successful completion of Ph.D. comprehensive examinations.

The majority of students will have completed a core program comprising graduate courses before taking the comprehensive examination.