ELECTRICAL AND COMPUTER ENGINEERING, PH.D.

All applicants accepted into the Electrical and Computer Engineering (ECE) doctoral program must have received a Bachelor of Science or Master of Science degree in electrical or computer engineering, or closely related fields. The GRE exam is required of all applicants.

The program requirements include a minimum of sixty (60) semester hours of approved course work and research hours beyond the bachelor's degree. The sixty (60) semester hours must meet the following minimums or maximums:

1. Thirty-six (36) semester hours of coursework including:

   • Minimum of fifteen (15) semester hours of ECE course work,
   • Maximum of six (6) semester hours of 4000 level ECE,
   • Minimum of six (6) semester hours outside ECE (see note 1 below), and
   • Minimum of twelve (12) semester hours of course work taken at Baylor.

1. Twenty-four (24) semester hours of dissertation (ELC 6V99 Dissertation).

Note 1: Engineering is inherently cross-disciplinary; students may select courses from non-ECE disciplines to broaden their understanding of particular application or knowledge domains. Supportive graduate course hours outside of ECE can be selected from mechanical or biomedical engineering, computer science, mathematics, statistics, the physical sciences, the social sciences, education or business. Engineering is also a value-based discipline that benefits from Christian world view and faith perspectives; students can also select supportive courses from religion, theology or philosophy. Course selection is broadly specified to provide flexibility and to accommodate a wide-range of student interest. The selection of specific courses must be approved by the student's graduate committee.

The minimal requirements may be expanded based on the student's background, research area and recommendations from the student's graduate committee. Students entering the program with graduate-level work or a master's degree in electrical or computer engineering, or a closely related field may apply up to twenty-nine (29) semester hours of approved courses toward the Ph.D. A break-down of the course requirements for non-ECE MS degree students is detailed as follows:

   • a maximum of 30 semester credit hours of approved Master's level course work with at most 6 hours of 4000 level courses,
   • a minimum of 12 semester hours of approved advanced level ECE course work, and
   • a minimum of 6 approved non-ECE courses (See Note 1 above).

Doctoral Candidates with Master's Degree Backgrounds

Students with a master's degree in a field other than electrical or computer engineering (or an equivalent) will be able to enter the ECE doctoral program. Each such student will be required to pass preliminary exams in appropriate areas or sub-disciplines of electrical or computer engineering and one sub-discipline or area of their background field.

Student's Graduate Committee

The Graduate Committee for a Ph.D. candidate shall consist of at least four graduate faculty members, at least three from ECE and at least one from outside of ECE. The chairperson of the Committee must be a tenured/tenure-track ECE graduate faculty. If deemed appropriate, a graduate faculty member outside of ECE can supervise and mentor the student, in the capacity of a co-chair of the Committee. The Committee's activities and structure will otherwise be governed by the appropriate sections of the Graduate Catalog.

Foreign Language Requirement

The ECE doctoral program does not have a foreign language requirement; however, competency in the use of technical tools and techniques such as computer programming, Matlab, Mathematica, VHDL, Verilog and CST is strongly encouraged.

Preliminary Examination and Research Proposal

Students must pass a preliminary examination to be admitted to candidacy. The written and oral preliminary exam will cover three of the principle sub-disciplines of ECE such as signals and systems, digital systems, linear systems and controls, electronics and circuits, electromagnetics, and communications systems. An exam in a sub-discipline of the student's background may be substituted for one of the required ECE sub-disciplines for students with non-ECE backgrounds. The preliminary exams are normally not administered until after a student has completed at least 36 hours of graduate course work beyond the bachelor's degree, with at least one year of work at Baylor. The student is further expected to present a research proposal to the ECE faculty, as approved by their graduate (dissertation) committee, within one year of passing the preliminary exam.

Dissertation

Candidates for the Ph.D. in electrical and computer engineering degree must complete an acceptable dissertation on a research topic in the ECE discipline or closely related field. The dissertation must give evidence that the candidate has pursued a program of research, the results of which reveal scholarly competence and a significant contribution to knowledge.