

**Department of Electrical and Computer Engineering
Doctoral Degree Program Assessment Plan**

A. Program title: Electrical and Computer Engineering

B. Program degree: PhD

C. Program objectives:

Core knowledge:

The objective of the first year is that students master the core subject areas within electrical and computer engineering consisting of signal processing, communications, linear systems, electronics, computer systems and physical electronics.

Research skills in specialized areas:

Students develop the ability to conduct independent research through supervised reading and research courses in their second year. The students' prospective Ph.D. advisor serves as the mentor in these courses.

Creative synthesis:

By the third year of studies students should be developing the ability to conduct self-directed research synthesizing ideas and methods from the various sub-fields of electrical and computer engineering. This skill-set is developed through research group meetings, departmental seminars and one on one interactions between students, their faculty advisors and more advanced doctoral students.

Development of research agenda/scholarship:

By the end of third year graduate students should have a well-defined Ph.D. thesis topic and write a Ph.D. thesis proposal which serves as the basis for the Qualifying examination, which ideally should be completed by the end of the students' third year of studies.

Oral communication:

Ability to communicate orally is a critical component of students' engineering training. Students are encouraged to present their research at technical conferences, departmental seminars, and in less formal settings such as group meetings or regional conference

Written communication:

Ability to Research results in ECE are disseminated primarily through conference papers and articles in archival journals, thus an important goal of the ECE program is to teach students to present their contributions clearly in written form. This is accomplished primarily through one-on-one instruction with the students' thesis advisors.

Teaching skills:

All ECE Ph.D. students are required to develop teaching skills and serve as a teaching assistant for one year. Students are evaluated at the end of each semester as part of the ongoing course evaluation process.

Core curriculum:

Students must complete courses in 3 areas: signals, communications, physical electronics and devices. Students also complete a course in VLSI/computer systems. These courses prepare students for the Core/ Comprehensive Exam.

D. Program assessment direct methods

The following methods will be implemented annually and for each doctoral degree candidate. Test results and faculty review forms for each method will be gathered in student file:

1. Grades in first and second year classes in 3 core curriculum areas of ECE. Students receive an academic warning if they receive one C grade; If students receive one C grade, they need to explain if there were mitigating circumstances in a letter. Students are placed on academic probation if they receive a second C grade.
2. Comprehensive exam in second or third semester. This is followed by an oral exam with advisor and one other ECE faculty. If student does not pass, student must take again within one semester.
3. Submission of PhD proposal (qualifying exam), is ideally completed in year 3, but no later than 6 months before thesis finished.
4. Submission of written doctoral thesis and pass written and oral PhD defense.
5. Teaching assistance 1 year. Evaluations are reviewed by faculty in charge. Teaching award each year.

E. Program assessment indirect methods

The following indirect methods will be implemented as noted:

1. Graduating Student Survey will be a web based survey distributed annually by the UR College Director of Assessment. The survey will ask students to rate program quality. The survey will also include questions that ask students to rate program quality and factors related to learning for communication, leadership, research and teaching.

2. Post-graduation career data from department data collection.

F. Program assessment data review

1. Data gathered will be reviewed by the faculty committee annually.
2. Data gathered on academic warning, qualifying exam results, and degrees conferred will be tabulated by the Graduate Studies Office and reviewed annually by the DGS.
2. Data gathered in Graduating Student Survey will be reported annually to the faculty committee and DGS by the College Director of Assessment.