

2012-2013 Ph.D. in Electrical and Computer Engineering Academic Assessment Plan

College of Engineering
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Office of the Provost

*University of
Florida*

*Institutional
Assessment*

*Continuous Quality
Enhancement*

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Academic Assessment Plan for Ph.D. in Electrical and Computer Engineering

College of Engineering

A. Mission

The mission of the Department of Electrical and Computer Engineering is to “Offer undergraduate and graduate degree programs in electrical and computer engineering and to conduct research which serves the needs of Florida and the nation.”

The graduate program in Electrical and Computer Engineering supports the university and college mission to address critical needs to the nation and the state by contributing to a well-qualified and broadly diverse citizenry, leadership and workforce through graduate education and research. We seek to produce electrical and computer engineers who design products and systems that meet the needs for today and tomorrow's electrical, computer, and electronic systems.

B. Student Learning Outcomes and Assessment Measures

Student Learning Outcomes (SLO) for the ECE Ph.D. program are assessed to ensure that graduates are prepared for successful careers in a dynamic industry that is global and multi-disciplinary. Graduates are expected to be good citizens engaged in ethical engineering practices for the betterment of society and the world. The program thus prepares the whole person.

SLO Type	Student Learning Outcome	Assessment Method	Degree Delivery
Knowledge	Ability to identify, formulate and solve engineering problems. Ability to critically read and integrate engineering research literature	The thesis proposal is an important requirement for the Ph.D. degree. The thesis committee will assess this outcome based on oral and written components of the thesis proposal defense.	Campus
Skills	Ability to use applied mathematical and/or modern experimental techniques. Ability to use modern engineering tools for practice at an advanced level.	The thesis committee will assess this outcome based on the oral and written components of the thesis proposal defense.	Campus
Professional Behavior	Ability to communicate effectively.	The thesis committee will assess this outcome based on the oral and written components of the thesis proposal defense.	Campus

C. Research

Students in the Electrical and Computer Engineering (ECE) Ph.D. program are expected to conduct original research with ECE faculty and faculty in engineering, math, physics, and other scientific disciplines. The research serves as the basis for the student’s Ph.D. dissertation. Students are expected to master the discipline of their area of research by completing appropriate coursework and by surveying the literature of their research topic. Students are expected to develop a research proposal and present the proposal for approval by their supervisory committee. Students are responsible for conducting the independent research required for the Ph.D. degree and then organizing their findings into a dissertation and defending their dissertation.

ECE Ph.D. students are prepared to become independent researchers by the knowledge they obtain from coursework and surveying the literature, developing a proposal under the guidance of their supervisory committee, and solving research problems. The experience of conducting a research program under the guidance of faculty and in cooperation with other graduate students and staff is the most important element in their preparation. Attending and making presentations at seminars, research meetings, and professional meetings are also important elements of a Ph.D. student’s education. Writing and defending a dissertation and publishing results in refereed journals are the final essential elements of a Ph.D. student’s preparation.

D. Assessment Timeline

Program: Ph.D. in Electrical & Computer Engineering College: Engineering

Assessment SLOs	Written Portion of the Qualifying Exam	Oral Portion of the Qualifying Exam	Final Defense
Knowledge			
Ability to identify, formulate and solve engineering problems	x	x	x
Ability to critically read and integrate engineering research literature	x	x	x
Skills			
Ability to communicate effectively	x	x	x
Ability to use modern engineering tools for practice at an advanced level	x	x	x
Professional Behavior			
Ability to communicate effectively	x	x	x

E. Assessment Cycle

Assessment Cycle for:

Ph.D. in Electrical and Computer Engineering College of Engineering

Analysis and Interpretation:

Fall and Spring terms annually

Program Modifications:

Completed by June 30th of each year

Dissemination:

Completed by June 30th of each year

SLOs	Year	10-11	11-12	12-13	13-14	14-15	15-16
Content Knowledge							
Ability to identify, formulate and solve engineering problems		X	X	X	X	X	X
Ability to critically read and integrate engineering research literature		X	X	X	X	X	X
Skills							
Ability to communicate effectively		X	X	X	X	X	X
Ability to use modern engineering tools for practice at an advanced level		X	X	X	X	X	X
Professional Behavior							
Ability to communicate effectively		X	X	X	X	X	X

F. Measurement Tools

Each doctoral student is evaluated annually by their faculty advisor based upon performance of assigned duties; compliance with department requirements such as maintenance of office hours, regular visits with the faculty advisor, academic progress; meeting the requirements of the supervisory committee, department, college, and graduate school relating to the timely execution of required documents such as plan of study, supervisory committee appointment form, etc.

For example, the written qualifying exam is offered once each year in January after the start of spring classes. The ECE Graduate PhD Exam Committee develops new questions for the exam each year. Each student selects three areas before the examination and receives two questions in each one of the selected areas. The areas are:

- Digital Logic
- Signals and Systems
- Electronic Circuits
- Solid State Devices
- Electromagnetism and Energy Systems
- Microprocessor Applications
- Computer Organization and Architecture

- Data Structures and Operating Systems

Answers must be given to four of the six questions, including at least one question from each of the three areas. The examination tests problem solving skills, fundamental understanding, reasoning ability, and written communication skills.

The student's faculty advisor is notified of the student's exam results. The written portion must be passed prior to taking the oral portion of the qualifying exam.

The oral portion of the qualifying exam is taken about one year after the satisfactory completion of the written portion of the exam. The oral part consists of presenting the student's written research proposal and answering questions asked by the supervisory committee and others who are present.

Student performance in the proposal exam is evaluated by the supervisory committee on a variety of measures (knowledge, skills and professional behavior) and scores are assigned based on the Likert scale: 1 (poor), 2 (fair), 3 (good), 4 (very good), 5 (excellent). Achievement of a 3 or better is required on each element. The form used for assessment is attached.

The student is also required to present and defend his/her dissertation to the satisfaction of the supervisory committee.

As an indirect assessment tool, we rely upon the exit survey. All ECE graduate students are required to complete the Exit Survey during the semester in which they plan to graduate. The survey contains questions specifically on faculty and course content assessment, knowledge and skills. The results of the survey are reviewed by the department chair, graduate coordinator, and the ECE Curriculum Committee.

G. Assessment Oversight

Name	Department Affiliation	Email Address	Phone Number
Dr. Robert Fox	Associate Chair	fox@ece.ufl.edu	392-2543

Figure 1. University of Florida Graduate/Professional Program Assessment Plan Review Rubric

Related resources are found at <http://www.ua.assessment.edu>

Program:		Year:			
Component	Criterion	Rating			Comments
		Met	Partially Met	Not Met	
Mission Statement	Mission statement is articulated clearly.				
	The program mission clearly supports the College and University missions, and includes specific statements describing how it supports these missions.				
Student Learning Outcomes (SLOs) and Assessment Measures	SLOs are stated clearly.				
	SLOs focus on demonstration of student learning.				
	SLOs are measurable.				
	Measurements are appropriate for the SLO.				
Research	Research expectations for the program are clear, concise, and appropriate for the discipline.				
Assessment Map	The Assessment Map indicates the times in the program where the SLOs are assessed and measured.				
	The Assessment Map identifies the assessments used for each SLO.				
Assessment Cycle	The assessment cycle is clear.				
	All student learning outcomes are measured.				
	Data is collected at least once in the cycle.				
	The cycle includes a date or time period for data analysis and interpretation.				
	The cycle includes a date for planning improvement actions based on the data analysis.				
	The cycle includes a date for dissemination of results to the appropriate stakeholders.				

University of Florida Graduate/Professional Program Assessment Plan Review Rubric, continued

Component	Criterion	Rating			Comments
		Met	Partially Met	Not Met	
Measurement Tools	Measurement tools are described clearly and concisely.				
	Measurements are appropriate for the SLOs.				
	Methods and procedures reflect an appropriate balance of direct and indirect methods.				
	The report presents examples of at least one measurement tool.				
Assessment Oversight	Appropriate personnel (coordinator, committee, etc.) charged with assessment responsibilities are identified				