

Assessment Plan

2017

Program: Ph.D. in Electrical Engineering

A Ph.D. in the Electrical Engineering allows graduates to pursue professional careers in institutions, national research labs, federal and state agencies, and private and public corporations. Students enrolled in the program will develop the ability to conduct independent research to address compelling problems of local, national and global significance in Electrical Engineering application. Students will have a strong foundation in engineering knowledge, as subject matter experts within a traditional discipline of engineering, to pursue careers in engineering research, development or education. Students will demonstrate the professional skills necessary to bridge the gap between the deep technical knowledge and scientific discoveries to practical application through careers in academe and industry. The overall goal of the program is to train and develop advanced positioners and research, develop and teaching scholars in Electrical Engineering.

1. Learning Objectives

Graduates of the Electrical Engineering Ph.D. program will demonstrate:

1. Fundamental understanding of the principles, major research findings and current unresolved problems in their area of emphasis
2. Effective scientific communication skills
3. Proficiency in critical thinking,
4. Appropriate use of the scientific method.
5. Technical writing proficiency
6. Original scholarship and the ability to conduct independent research

2. Method

Method	Description/Target	Timeline	Person/People Responsible	Objectives Assessed
Ph.D. Candidacy Examination	Students must pass a candidacy exam for the Ph.D. that consists of a written and oral examination based on the core courses. The candidacy exam tests the depth and breadth of the student's knowledge in the field of EE. Target: over 90% of Ph.D. students initially admitted to the program are expected to	Sometime in 1 years after finishing all the core courses	Graduate faculty members	1,2,3,4,5

	successfully pass this qualifying exam.			
Dissertation Proposal Examination	The dissertation proposal tests the depth and breadth of the student's knowledge in their area of research, and assesses the student's ability to design and present a coherent, logical and appropriate research plan. Students are also expected to be able to present a coherent, logical and appropriate research plan describing specific experimental approaches that will be carried out to investigate current ISYE problems in their area of concentration. Target: 100% of Ph.D. students passing the candidacy exam are expected to successfully pass the dissertation proposal.	One semester before the dissertation defense.	Dissertation Research Committee (Graduate faculty members)	1,2,3,4,5,6
Written Research Dissertation and Defense	Students must write a Ph.D. dissertation that exhibits original research. Students will defend the Ph.D. dissertation in a public seminar and in a comprehensive examination conducted by the student's advisory committee. Target: 100% of students receiving the Ph.D. degree are expected to meet this requirement.	Final Semester of the students' Ph.D. program	Dissertation Research Committee (Graduate faculty members)	1,2,3,4,5,6
Committee Meetings	This is a tool of formative assessment. Ph.D. students establish and meet with their advisory committees during their second year, and every 6-12 months thereafter. Students present their project data, progress and proposed plan of research. The committee asks questions, provides feedback and constructive criticism and frames the expectations for the	Every 6-12 months	Dissertation Research Committee (Graduate faculty members)	1,2,3,4,5,6

	<p>student's final dissertation content.</p> <p>Target: 100% of the students passing into candidacy will go on to produce a successful dissertation research project.</p>			
<p>Doctoral Dissertation Research (ELE 799)</p>	<p>All post-candidacy Ph.D. students must take at least 27 hours of ELE 799. During their execution of their research projects, students typically meet with and present their research to the principal investigator/ dissertation research advisor in lab meetings or individual meetings. The advisor provides advice and direction, and assesses progress by the student.</p> <p>Target: 100% of post-candidacy Ph.D. students will successfully complete 27 hours of ELE799.</p>	<p>Every semester after successful completion of the qualifying examination.</p>	<p>Dissertation Research Advisor</p>	<p>1,2,3,4,6</p>

Outcome-by-Methods	Summative Assessment			Formative Assessment	
	Qualifying Exam	Proposal Defense	Ph.D. Dissertation and Defense	Research Committee Meetings	Dissertation Research
1. Principles/Problems	X	X	X	X	X
2. Communication	X	X	X	X	X
3. Critical Thinking	X	X	X	X	X
4. Scientific Method	X	X	X	X	X
5. Technical Writing	X	X	X	X	X
6. Original Independent Research		X	X	X	X