

Academic Assessment Plan
Master of Science in Electrical Engineering
June 2015

Program Goals

Graduate students with an M.S.E.E. degree should be able to:

1. Have sufficiently deep knowledge of some specialty area within electrical engineering in order to be recognized as an expert or innovator in that specialty. Graduates should also be competent in related areas of electrical engineering, engineering, science, and mathematics which impact performance in their specialty areas.
2. Formulate a project plan, execute such a plan, and to generate and analyze results.
3. Communicate effectively using both oral and written presentations.
4. Be prepared for successful careers in industry, government, or academia (As part of this they should have the skills required for life-long learning and professional development).
5. Appreciate the importance of professional responsibility to society in such areas as the environment, social issues, and safety, and should be committed to ethical conduct in all areas.
6. Understand the value of leadership & service.

Student Learning Outcomes

Each graduate student should be able to:

1. Apply knowledge of engineering, science, and mathematics to analyze and solve advanced electrical engineering problems.
2. Locate literature relevant to a specific topic, understand and evaluate it, and apply the information.
3. Conduct independent study such as research or a design project, and to make effective use of the tools available for those studies.
4. Have an in-depth knowledge of some specialty area within electrical engineering.
5. Communicate effectively using both oral and written presentations.
6. Understand the need for continued learning and professional development, and should understand the need to maintain awareness of current professional issues.
7. Have an appreciation of the importance of professional responsibility to society in such areas as the environment, social issues, and safety, and should be committed to ethical conduct in all areas.

PhD in Electrical Engineering

June 2015

Program Goals

Graduate students with a Ph.D. (EE) degree should be able to:

1. Have sufficiently deep knowledge of some specialty within electrical engineering to be recognized as an expert or innovator in that specialty. Graduates should also be competent in related areas of electrical engineering, engineering, science, and mathematics which impact performance in their specialty areas.
2. Identify pertinent research problems and to formulate a research plan. Graduates should be able to execute research plans, and to generate and analyze original research results.
3. Communicate effectively using both oral and written presentations.
4. Be prepared for successful careers in industry, government, or academia. As part of this they should have the skills required for life-long learning and professional development.
5. Appreciate the importance of professional responsibility to society in such areas as the environment, social issues, and safety, and should be committed to ethical conduct in all areas.
6. Understand the value of leadership and service.

Program Objectives

Each graduate student should be able to:

1. Apply knowledge of engineering, science, and mathematics to analyze and solve advanced electrical engineering problems.
2. Locate literature and other sources of information relevant to a specific topic, understand and evaluate it, and apply the information.
3. Define and conduct independent research, and to make effective use of the tools available for that research. A student should also be able to develop new tools, methods, and techniques when necessary to accomplish research objectives.
4. Have an in-depth knowledge of some specialty area within electrical engineering, and should have a broad knowledge of related areas in engineering, science, and mathematics.
5. Communicate effectively using both oral and written presentations.
6. Understand the need for continued learning and professional development, and should understand the need to maintain awareness of current professional issues.
7. Have an appreciation of the importance of professional responsibility to society in such areas as the environment, social issues, and safety, and should be committed to ethical conduct in all areas.

Process for Assessing Graduate Student Learning Outcomes in the ELEG Graduate Programs

A diagram of the process is included in Figure 1 and Table 1 shows the timeline for the data collection and assessment. Several tools are used to assess whether students have successfully met the program outcomes specified above. In particular:

- (a) For each graduate course, graduate students and instructors are asked to complete a form assessing the program outcomes at the end of each semester. This form allows them to express their opinion on how well expected course outcomes were met. This collection process started in the spring 2015 semester.
- (b) Written questionnaire filled by the graduating graduate students. The questionnaire is given under Appendix A.
- (c) Graduate exit interview with the head of department.
- (d) Members of the Arkansas Academy of Electrical Engineers (AAEE) are periodically asked for informal feedback on the current educational objectives and outcomes.

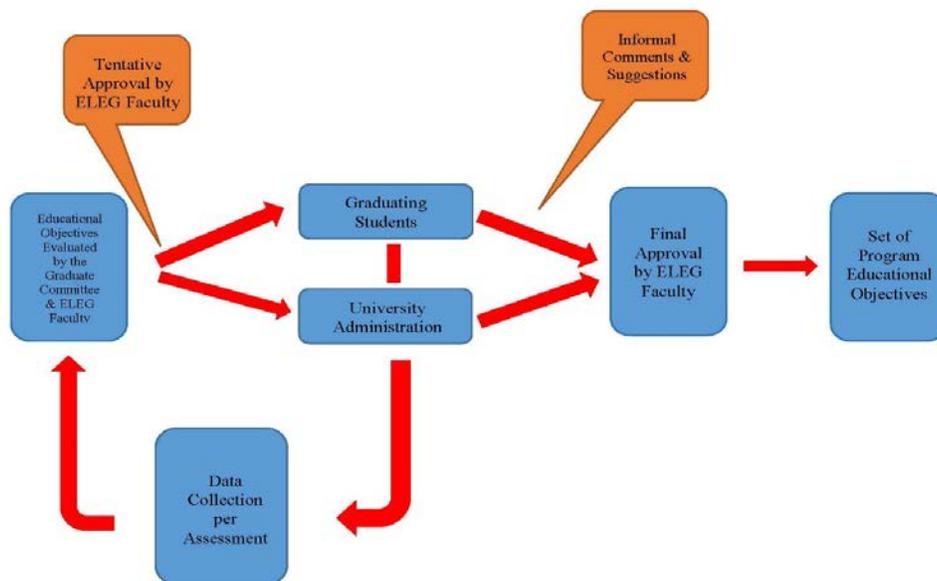


Figure 1 Flow chart of the data collection process for assessing ELEG graduate programs.

Table 1. ELEG Graduate Outcome Assessment Timetable

Electrical Engineering Graduate Outcome Assessment Timetable							
Program Outcome	Data Collection			Data Assessment		Graduate Program Changes	
	Tool	Frequency	Responsibility	Frequency	Responsibility	Frequency	Responsibility
(1) through (7)	Evaluation of students' ability and/or knowledge of program outcomes by students	Semester	Graduate Coordinator	Annually	Graduate Committee	Bi-Annually	ELEG Faculty
	Evaluation of students' ability and/or knowledge of program outcomes by instructors	Semester	Graduate Coordinator	Annually	Graduate Committee	Bi-Annually	ELEG Faculty
	Senior Exit Interviews (SEI)	Semester	Department Head	Annually	Graduate Committee	Bi-Annually	ELEG Faculty

APPENDIX

Questions to Ask Grad Students at Graduate Exit Interviews

(Schedule the Interview *after* the Defense)

1. What do you think are the main strengths of our graduate program?
2. What are the main weaknesses of our graduate program (especially of its structure)?
3. Can you think of any very specific strengths or weaknesses?
4. What could we do to make our graduate program better?
5. How did you first hear about the University of Arkansas?
6. What did people say about it? Be honest & complete!
7. What could we do to recruit more students like you?

Continued Learning Questions for Graduate Student Exit Interviews

1. As time passes, things learned in engineering become obsolete. Think about vacuum tubes, DTL logic, etc. How many years do you think it will be until half of the stuff you learned in graduate school is no longer very useful because of being obsolete?
2. Before this happens, what will you need to do to stay on top of new information/technology?
3. Describe the things likely to happen in your career if you don't learn very much after you graduate. Be as specific as possible.
4. What are good ways of learning new technical material after you have left college?
5. What are some current professional issues in your research specialty? (widely discussed and/or hotly debated topics)
6. Will it be important to stay aware of current professional issues after you leave school? Why? Be specific.

Professional Responsibility to Society

1. Is it important to society for engineers to try to protect the environment? What difference will it make?
2. What are some ways in which engineers can improve the environment?
3. What are some examples of engineering decisions that harmed the environment?
4. Suppose your employer plans to dump toxic waste. As an engineer who knows about it, are you responsible to report him? Would you do it if you knew it would cost your job?
5. How important is it to society for engineers to go the extra mile to protect consumers & the public from hazards? Is it reasonable to rely on owners, managers & the government to look out for safety? Why or why not?
6. What are some examples of hazards that engineers should help protect the public from?
7. If you know about a hazard, but don't do anything about it because your boss refuses and it might cost you your job, are you responsible for the harm done to people?
8. What are some social issues that an electrical engineer might be involved in professionally?
9. Are engineers involved in issues of fair employment? (race, gender, etc.)
10. Should engineers be involved in issues like patent or copyright reform? Why or why not?
11. Do engineers make decisions that impact online privacy? Are they morally responsible for those decisions?