

Bachelor of Science in Electrical Engineering

Undergraduate

Expanded Statement of Institutional Purpose

Institutional Mission Reference

The Department of Electrical and Computer Engineering offers a degree program that meets national standards of excellence. It is a significant component of the University's commitment to science, engineering, and technology, particularly in fields of major importance to the region. The program provides the skills and knowledge unique to Electrical Engineering that support the engineering profession in meeting the growing needs of the region and the nation. Simultaneously, the program comprises the general education components that yield a well-rounded graduate who is aware of societal needs and issues. The program's faculty is committed to the highest quality of teaching.

Institutional Goal(s) Supported

The B.S. degree program in Electrical Engineering supports the University missions and goals of (a) quality undergraduate programs, (b) sound general education program, (c) serving the local community through applied research and development, and (d) life-long learning. The major strategic goals supported by the department are to: (1) increase academic quality, (2) create an agenda and climate to encourage research and creative activity, (3) improve the quality and productivity of graduate programs, and (4) make the University sensitive to the people and the needs of the region and world around it.

Intended (Student) Outcomes for your program, Methods for Assessment, and Criteria for Success

Intended Outcome 1: Students who qualify for graduation will be proficient in mathematics through differential equations, probability and statistics, calculus-based physics, general chemistry, and engineering science and have the ability to apply knowledge in these areas to electrical engineering problems.

Method for Assessing Outcome 1 and Criterion for Success: Three courses will be identified that contain large amounts of the material mentioned. Based on class performance, each student's ability will be characterized as 'unacceptable', 'marginal', 'adequate' or 'exceptional'. No student should be characterized as "unacceptable." At least 80% of the students will demonstrate 'adequate' or higher ability.

Alternate Method for Assessing Outcome 1 and Criterion for Success: On the basis of senior exit surveys the program will receive ratings of at least 4.5 on a scale of 1 to 7 (1=Not at All, 4=Moderate, 7=Extreme) on questions related to this outcome.

Intended Outcome 2: Students who qualify for graduation will have the ability to design and conduct experiments and to critically analyze and interpret data in various electrical engineering fields.

Method for Assessing Outcome 2 and Criterion for Success: Laboratory reports associated with both design and analysis experiments will be reviewed with the aid of an assessment rubric to determine if each student's performance is 'unacceptable', 'marginal', 'adequate' or 'exceptional'. The goal is that at least 80% of the students will demonstrate 'adequate' or higher ability.

Alternate Method for Assessing Outcome 2 and Criterion for Success: On the basis of senior exit surveys the program will receive ratings of at least 4.5 on a scale of 1 to 7 (1=Not at All, 4=Moderate, 7=Extreme) on questions related to this outcome.

Intended Outcome 3: Students who qualify for graduation will be able to develop design criteria to meet desired needs and to design a Electrical engineering system, component, or a process satisfying these criteria.

Method for Assessing Outcome 3 and Criterion for Success: At least 85% of graduates will earn at least ratings of 'good or better' performance on the technical portions of their senior design assessment.

Alternate Method for Assessing Outcome 3 and Criterion for Success: On the basis of senior exit surveys the program will receive ratings of at least 4.5 on a scale of 1 to 7 (1=Not at All, 4=Moderate, 7=Extreme) on questions related to this outcome.

Intended Outcome 4: Students who qualify for graduation will have the ability to function on multi-disciplinary teams.

Method for Assessing Outcome 4 and Criterion for Success:
At least 85% of graduates will earn at least ratings of 'good or better' performance on the teamwork portions of their senior design assessment.

Alternate Method for Assessing Outcome 4 and Criterion for Success: On the basis of senior exit surveys the program will receive ratings of at least 4.5 on a scale of 1 to 7 (1=Not at All, 4=Moderate, 7=Extreme) on questions related to this outcome.

Alternate Method for Assessing Outcome 4 and Criterion for Success: By means of reports filled out by employers of students participating in co-operative education programs, at least 80% of students will be rated as having a satisfactory ability to collaborate and work with others, and at least 50% of students will be rated as good to excellent for this.

Intended Outcome 5: Students who qualify for graduation will be able to identify and formulate an engineering problem, to collect and analyze relevant data, and to develop a solution.

Method for Assessing Outcome 5 and Criterion for Success:
At least 85% of graduates will earn at least ratings of 'good or better' performance on the technical portions of their senior design assessment.

Alternate Method for Assessing Outcome 5 and Criterion for Success:
On the basis of senior exit surveys the program will receive ratings of at least 4.5 on a scale of 1 to 7 (1=Not at All, 4=Moderate, 7=Extreme) on questions related to this outcome.

Intended Outcome 6: Students who qualify for graduation will understand and appreciate professional and ethical responsibilities such as the engineer's primary commitment to the public welfare.

Method for Assessing Outcome 6 and Criterion for Success:
On the basis of class periods devoted to this topic in the senior design course, at least 80% of students will be expected to participate in discussions of the topic.

Alternate Method for Assessing Outcome 6 and Criterion for Success: On the basis of senior exit surveys the program will receive ratings of at least 4.5 on a scale of 1 to 7 (1=Not at All, 4=Moderate, 7=Extreme) on questions related to this outcome.

Intended Outcome 7: Students who qualify for graduation will be able to effectively present ideas and technical material to diverse audiences in written, visual, and oral formats.

Method for Assessing Outcome 7 and Criterion for Success: At least 85% of graduates will earn at least ratings of 'good or better' performance on the oral presentation portions of their senior design assessment.

Alternate Method for Assessing Outcome 7 and Criterion for Success: At least 80% of students will earn at least ratings of 'adequate' or better based on term papers and oral presentations used in at least two courses.

Alternate Method for Assessing Outcome 7 and Criterion for Success: On the basis of senior exit surveys the program will receive ratings of at least 4.5 on a scale of 1 to 7 (1=Not at All, 4=Moderate, 7=Extreme) on questions related to this outcome.

Intended Outcome 8: Students who qualify for graduation will have the broad education necessary to understand the impact of engineering solutions in a societal and global context.

Method for Assessing Outcome 8 and Criterion for Success: On the basis of senior exit surveys the program will receive ratings of at least 4.5 on a scale of 1 to 7 (1=Not at All, 4=Moderate, 7=Extreme) on questions related to this outcome.

Intended Outcome 9: Students who qualify for graduation will understand and appreciate the importance of professional licensure and commitment to lifelong learning.

Method for Assessing Outcome 9 and Criterion for Success: By means of reports filled out by employers of students participating in co-operative education programs, at least 80% of students will be rated as having a satisfactory ability to learn new techniques, and at least 50% of students will be rated as good to excellent.

Alternate Method for Assessing Outcome 9 and Criterion for Success: On the basis of senior exit surveys the program

will receive ratings of at least 4.5 on a scale of 1 to 7 (1=Not at All, 4=Moderate, 7=Extreme) on questions related to this outcome.

Intended Outcome 10: Students who qualify for graduation will have knowledge of current issues and awareness of emerging technologies.

Method for Assessing Outcome 10 and Criterion for Success: On the basis of senior exit surveys the program will receive ratings of at least 4.5 on a scale of 1 to 7 (1=Not at All, 4=Moderate, 7=Extreme) on questions related to this outcome.

Intended Outcome 11: Students who qualify for graduation will have an ability to use modern engineering techniques, skills, and tools (including computer-based tools) for Electrical engineering analysis and design.

Method for Assessing Outcome 11 and Criterion for Success: By means of reports filled out by employers of students participating in co-operative education programs, at least 80% of students will be rated as having a satisfactory ability to use modern engineering techniques, skills and tools, and at least 50% of students will be rated as good to excellent.

Alternate Method for Assessing Outcome 11 and Criterion for Success: On the basis of senior exit surveys the program will receive ratings of at least 4.5 on a scale of 1 to 7 (1=Not at All, 4=Moderate, 7=Extreme) on questions related to this outcome.