

Bachelor of Science in Environmental Engineering

Undergraduate

Expanded Statement of Institutional Purpose.

Institutional Mission Reference

The B.S. degree program in Environmental Engineering offers a high quality 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 Environmental 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 faculty is committed to the highest quality of teaching and discovery of new knowledge.

Institutional Goal(s) Supported

The B.S. degree program in Environmental 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 (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, (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 environmental engineering problems.

Method for Assessing Outcome 1 and Criterion for Success: Questions placed in tests and assignments in at least three courses are used to assess the students' ability. Based on his/her performance, each student's ability will be characterized as '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 1 and Criterion for Success: On the basis of senior exit surveys the program will receive ratings of 5.0 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 environmental engineering fields.

Method for Assessing Outcome 2 and Criterion for Success: Laboratory reports for 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 5.0 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 an environmental engineering system, component, or a process satisfying these criteria.

Method for Assessing Outcome 3 and Criterion for Success: 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: Questions placed in tests and assignments in at least three courses are used to assess the students' ability. Based on his/her performance, each student's ability will be characterized as '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 3 and Criterion for Success: On the basis of senior exit surveys the program will receive ratings of 5.0 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 ability to function on multi-disciplinary teams.

Method for Assessing Outcome 4 and Criterion for Success: 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 5.0 on a scale of 1 to 7 (1=Not at All, 4=Moderate, 7=Extreme) on questions related to this outcome.

Intended Outcome 5: Students who qualify for graduation 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: 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: Questions placed in tests and assignments in at least three courses are used to assess the students' ability. Based on his/her performance, each student's ability will be characterized as '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 5 and Criterion for Success: On the basis of senior exit surveys the program will receive ratings of 5.0 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 and professional practice issues such as procurement of work, bidding versus quality based selection processes, and interaction between design and construction professionals.

Method for Assessing Outcome 6 and Criterion for Success:

Questions placed in tests and assignments in at least two courses are used to assess the students' ability. Based on his/her performance, each student's ability will be characterized as '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 6 and Criterion for Success: On the basis of senior exit surveys the program will receive ratings of 5.0 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 writing, visually, and verbally.

Method for Assessing Outcome 7 and Criterion for Success: 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: 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 5.0 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: Questions placed in tests and assignments in at least two courses are used to assess the students' ability. Based on his/her performance, each student's ability will be characterized as '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 8 and Criterion for Success: On the basis of senior exit surveys the program will receive ratings of 5.0 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 life-long learning.

Method for Assessing Outcome 9 and Criterion for Success: Questions placed in tests and assignments in at least two courses are used to assess the students' ability. Based on his/her performance, each student's ability will be characterized as '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 9 and Criterion for Success: On the basis of senior exit surveys the program will receive ratings of 5.0 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: Questions placed in tests and assignments in one or more courses are used to assess the students' ability. Based on his/her performance, each student's ability will be characterized as '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 10 and Criterion for Success: On the basis of senior exit surveys the program will receive ratings of 5.0 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

environmental engineering analysis and design.

Method for assessing Outcome 11 and criterion for success:

Questions placed in tests and assignments in at least three courses are used to assess the students' ability. Based on his/her performance, each student's ability will be characterized as 'unacceptable', 'marginal', 'adequate' or 'exceptional'. The goal is that at least 80% of the students will demonstrate 'adequate' or higher.

Alternate Method for assessing Outcome 11 and criterion for

success: On the basis of senior exit surveys the program will receive ratings of 5.0 on a scale of 1 to 7 (1=Not at All, 4=Moderate, 7=Extreme) on questions related to this outcome.