B.S. IN ENVIRONMENTAL ENGINEERING

Overview

The Environmental Engineering curriculum provides an integrated educational experience in mathematics, basic sciences, humanities, social sciences, engineering sciences, and environmental engineering design. The first two years of the Environmental Engineering curriculum provide a strong foundation in mathematics, basic sciences, and engineering sciences. The next two years of the four-year program, integrate engineering sciences with design applications.

Design courses emphasize an integrated approach that considers all environmental media in the prevention and control of environmental problems. The curriculum culminates with a major senior-level design project that includes design applications from the major specialty areas of environmental engineering.

Curriculum Requirements

Code	Title	Credit Hours
Engineering Courses		
EGN 114	Global Challenges Addressed by Engineering and Technology	3
CET 300	Computational Methods for Engineers (Computational Methods for Engineers (NEW COURSE))	3
CET 330	Fluid Mechanics	3
CET 340	Introduction to Environmental Engineering	3
CET 345	Environmental Laboratory and Analysis [1]	3
CET 403	Senior Design Project I - Engineering Design	3
CET 404	Senior Design Project II – Integrated Engineering Documents [1]	3
CET 430	Water-Resources Engineering I	3
CET 440	Water Quality Control Systems	3
CET 530	Water Resources Engineering II	3
CET 533	Water-Quality Control in Natural Systems	3
CET 540	Environmental Chemistry	3
CET 541	Environmental Engineering Microbiology	3
CET 543	Air Pollution Control Engineering	3
CAE 115	Introduction to Engineering II: Geospatial Data (Surveying and GIS)	2
CAE 210	Mechanics of Solids I	3
CAE 402	Professional Engineering Practice [1]	3
ECE 205	Principles of Electrical Engineering--I	3
ISE 311	Applied Probability and Statistics	3
MAE 303	Thermodynamics	3
Technical Elective		3
Marine Science Courses		
MSC 301	Introduction to Physical Oceanography	3
Marine/Atmospheric Science Elective		3
Math and Science Courses		
MTH 151	Calculus I for Engineers [2]	5
MTH 162	Calculus II	4
MTH 211	Calculus III	3
MTH 311	Introduction to Ordinary Differential Equations	3
PHY 221	University Physics I	3
PHY 222	University Physics II	3
PHY 106	Physics Laboratory 1	1
CHM 121	Principles of Chemistry	4
CHM 113	Chemistry Laboratory I	1
Biology Elective		3
General Education Requirements		
Written Communication Skills:		

WRS 105	First-Year Writing I	3
WRS 107	First-Year Writing II: STEM	3
Quantitative Skills:		
MTH 151	Calculus I for Engineers (fulfilled through the major)	
Areas of Knowledge:		
Arts and Humanities Cognate		9
People and Society Cognate		9
STEM Cognate (9 credits) (fulfilled through the major)		
Total Credit Hours		**122**

1 Counts toward the Advanced Writing and Communication Skills Requirement
2 Fulfills the University General Education Quantitative Skills Proficiency Requirement

Internships, Practical Training, or other types of practicums are neither required nor optional credit-earning components in the established undergraduate curriculum. Credit earned through these experiences via UMI 305 will not count towards the degree requirements.

Plan of Study

Freshman Year		
Fall		**Credit Hours**
EGN 114	Global Challenges Addressed by Engineering and Technology	3
MTH 151	Calculus I for Engineers	5
PHY 221	University Physics I	3
WRS 105	First-Year Writing I	3
	Credit Hours	**14**
Spring		
CAE 115	Introduction to Engineering II: Geospatial Data (Surveying and GIS) [1]	2
MTH 162	Calculus II	4
PHY 222	University Physics II	3
PHY 106	Physics Laboratory 1	1
WRS 107	First-Year Writing II: STEM	3
PS Cognate [2]		3
	Credit Hours	**16**
Sophomore Year		
Fall		
CET 300	Computational Methods for Engineers [1]	3
CAE 210	Mechanics of Solids I	3
MTH 211	Calculus III	3
CHM 121	Principles of Chemistry	4
CHM 113	Chemistry Laboratory I	1
PS Cognate [2]		3
	Credit Hours	**17**
Spring		
CET 340	Introduction to Environmental Engineering [1]	3
ECE 205	Principles of Electrical Engineering--I	3
MTH 311	Introduction to Ordinary Differential Equations	3
Biology Elective [6]		3
AH Cognate [2]		3
	Credit Hours	**15**
Junior Year		
Fall		
CET 330	Fluid Mechanics	3
CET 345	Environmental Laboratory and Analysis [1]	3

MAE 303	Thermodynamics	3
ISE 311	Applied Probability and Statistics	3
MSC 301	Introduction to Physical Oceanography (MSC 111 not required)	3
	Credit Hours	**15**
Spring		
CET 430	Water-Resources Engineering I [1]	3
CET 440	Water Quality Control Systems [1]	3
Environmental Engineering Course [3]		3
Marine/Atmospheric Science Elective [4]		3
Technical Elective [5]		3
	Credit Hours	**15**
Senior Year		
Fall		
CET 403	Senior Design Project I - Engineering Design [1]	3
CET 530	Water Resources Engineering II [1]	3
Environmental Engineering Course [3]		3
Environmental Engineering Course [3]		3
AH Cognate [2]		3
	Credit Hours	**15**
Spring		
CET 404	Senior Design Project II – Integrated Engineering Documents [1]	3
CAE 402	Professional Engineering Practice	3
Environmental Engineering Course [3]		3
AH Cognate [2]		3
PS Cognate [2]		3
	Credit Hours	**15**
	Total Credit Hours	**122**

1 Only offered once a year in the semester indicated in the curriculum.

2 To be selected from approved lists. Students take a minimum of 3 courses (9 credits) in the AH cognate and 3 courses in the PS cognate (9 credits).

3 CET 533, CET 540, CET 541, and CET 543 are offered on a 3-semester rotation. Students must take all four courses.

4 Students must select the Marine/Atmospheric Science Elective from the list of (a) 300-level or higher elective courses required for a minor in Marine Science, or (b) MSC 311, MSC 313, MSC 314, MSC 339, MSC 340, MSC 341, MSC 342, MSC 345, MSC 418, MSC 425. To complete the requirements for the minor in Marine Science, additional courses are required. The requirements for the minor in Marine Science can be found in the University Bulletin.

5 Technical Elective is any engineering course 200 level or higher. CET 395 Undergraduate Research can also be used as a Technical Elective.

6 BIL 150 or BIL 160. Note that BIL 151 need not be taken with BIL 150, and BIL 150 is a prerequisite of BIL 160.

Mission

The mission of the Department of Chemical, Environmental, and Materials Engineering is to:

- Provide high-quality undergraduate and graduate education in chemical, environmental, and materials engineering that will prepare graduates for professional careers and a lifetime of learning.
- Conduct high-quality research that will advance the body of knowledge and improve the quality of human life.
- Serve the engineering profession and society through active involvement in professional organizations and contribution of professional expertise.

Educational Objectives

The educational objectives of the Environmental Engineering Program are to produce graduates who within the first several years following graduation are either

1. Working as a professional in an area closely related to environmental engineering, or
2. Pursuing a graduate or professional degree.

Student Learning Outcomes

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.