

# ENVIRONMENTAL ENGINEERING UNDERGRADUATE MAJOR (BA, BS, HBA, HBS)

The Bachelor of Science and Honors Bachelor of Science degrees in Environmental Engineering are accredited by the Engineering Accreditation Commission of ABET, <http://www.ABET.org>.

The ENVE program draws upon a strong foundation in the basic sciences and prepares students for environmental engineering careers in consulting, industry, and state and local governments. It is a rigorous program incorporating course work in civil and chemical engineering, water and wastewater treatment, hazardous substance management, air pollution, and environmental health. The concept of environmental engineering design is introduced during the freshman year, with most of the design skills developed at the junior and senior level. Training culminates in team-based solutions to open-ended, realistic problems that incorporate aspects of economics, process operation and maintenance, process stability and reliability, and consideration of constraints.

Alumni of the environmental engineering program will be work-ready engineers prepared with the knowledge and skills necessary to solve contemporary environmental engineering problems. Program educational objectives can be found [here](#).

The environmental engineering undergraduate curriculum is designed to meet the student objectives through relevant course content, structured collaborative learning experiences, and hands-on laboratory and design experiences in the first year through senior levels. The school has a core curriculum where students from all three programs housed within the school (CHE, BIOE, ENVE) take common courses in the areas of first-year engineering, materials and energy balances, thermodynamics, transport phenomena, and senior year unit operations.

Environmental engineering students have opportunities to obtain internships offered through the School of CBEE, and through the College of Engineering Multiple Engineering Cooperative Program (MECOP). Many scholarships are available on a competitive basis for environmental engineering undergraduate students. More detailed descriptions of the curriculum and requirements may be viewed [here](#).

## Major Code: 311

- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- 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.
- Communicate effectively with a range of audiences.
- 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.
- Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- Acquire and apply new knowledge as needed, using appropriate learning strategies.

First Year		Credits
CBEE 101	CHEMICAL, BIOLOGICAL, AND ENVIRONMENTAL ENGR ORIENTATION <sup>1</sup>	3
CBEE 102	ENGINEERING PROBLEM SOLVING AND COMPUTATIONS	3
CH 231 & CH 261	GENERAL CHEMISTRY and *LABORATORY FOR CHEMISTRY 231 <sup>1</sup>	5
CH 232 & CH 262	GENERAL CHEMISTRY and *LABORATORY FOR CHEMISTRY 232 <sup>1</sup>	5
CH 233 & CH 263	GENERAL CHEMISTRY and *LABORATORY FOR CHEMISTRY 233 <sup>1</sup>	5
COMM 111 or COMM 114	*PUBLIC SPEAKING or *ARGUMENT AND CRITICAL DISCOURSE	3
HHS 231	*LIFETIME FITNESS FOR HEALTH <sup>2</sup>	2
HHS 241	*LIFETIME FITNESS (or any PAC course) <sup>2</sup>	1-2
MTH 251	*DIFFERENTIAL CALCULUS	4
MTH 252	INTEGRAL CALCULUS	4
MTH 254	VECTOR CALCULUS I	4
PH 211	*GENERAL PHYSICS WITH CALCULUS	4
WR 121	*ENGLISH COMPOSITION	3
Credits		46-47
Second Year		
CBEE 211	MATERIAL BALANCES AND STOICHIOMETRY <sup>1</sup>	3
CBEE 212	ENERGY BALANCES <sup>1</sup>	3
CBEE 213	PROCESS DATA ANALYSIS <sup>1</sup>	4
CH 331 & CH 332	ORGANIC CHEMISTRY and ORGANIC CHEMISTRY	8
ENGR 211	STATICS	3
ENGR 212	DYNAMICS	3
ENGR 213	STRENGTH OF MATERIALS <sup>1</sup>	3
GEO 221	*ENVIRONMENTAL GEOLOGY	4
MTH 256	APPLIED DIFFERENTIAL EQUATIONS	4
MTH 306 or MTH 264 and MTH 265	MATRIX AND POWER SERIES METHODS or INTRODUCTION TO MATRIX ALGEBRA and INTRODUCTION TO SERIES	4
PH 212 & PH 213	*GENERAL PHYSICS WITH CALCULUS and *GENERAL PHYSICS WITH CALCULUS	8
Perspectives <sup>2</sup>		3
Credits		50
Third Year		
CBEE 320	PROFESSIONALISM AND ENGINEERING ETHICS	3
CCE 201	CIVIL AND CONSTRUCTION ENGINEERING GRAPHICS AND DESIGN <sup>1</sup>	3
CE 313 or CE 372	HYDRAULIC ENGINEERING or GEOTECHNICAL ENGINEERING I	4
CE 412	HYDROLOGY	4
CHE 311	THERMODYNAMICS	3
CHE 331	TRANSPORT PHENOMENA I	4
CHE 332	TRANSPORT PHENOMENA II	3
CHE 333	TRANSPORT PHENOMENA III	3
CHE 334	TRANSPORT PHENOMENA LABORATORY	3
ENVE 322	FUNDAMENTALS OF ENVIRONMENTAL ENGINEERING	4
MB 230	*INTRODUCTORY MICROBIOLOGY	4
WR 327	*TECHNICAL WRITING <sup>2</sup>	3
Perspectives <sup>2</sup>		9
Credits		50
Fourth Year		
BIOE 457	BIOREACTORS	3
CBEE 414	*PROCESS ENGINEERING LABORATORY	3
ENVE 415	ENVIRONMENTAL ENGINEERING LABORATORY	3

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ENVE 421	DRINKING WATER TREATMENT PROCESSES	4
ENVE 422	WASTEWATER TREATMENT PROCESSES	4
ENVE 425	AIR POLLUTION CONTROL	3
ENVE 431	FATE AND TRANSPORT OF CHEMICALS IN ENVIRONMENTAL SYSTEMS	4
ENVE 456	SUSTAINABLE WATER RESOURCES DEVELOPMENT	3
ENVE 490	ENVIRONMENTAL ENGINEERING DESIGN	4
Perspectives <sup>2</sup>		3
Synthesis <sup>2</sup>		6
Technical electives		7
Total credits required for graduation is 192		
	Credits	47
Total Credits		193-194

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Baccalaureate Core Course (BCC)

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Writing Intensive Course (WIC)

1

Prerequisite for several upper-division courses

2

Must be selected to satisfy the requirements of the baccalaureate core

**Major Code: 311**