

2014-2015 Catalogue

ENVIRONMENTAL ENGINEERING B.S.EV.

All students must meet the University Requirements.

The curriculum leading to a B.S. degree in Environmental Engineering provides a strong foundation in mathematics, physical, natural and engineering sciences. Instruction in environmental engineering includes air pollution, surface and groundwater hydrology, water and wastewater engineering and waste management.

An Environmental Engineering degree is excellent preparation for immediate employment in consulting firms, government agencies, non-profits, and industry. Additionally, many graduates continue their education at the graduate-level.

A systems approach to engineering problem solving is central to the curriculum and involves integrating the short and long-term social, environmental and economic aspects and impacts into engineering solutions. As part of this approach, service-learning projects with local communities and non-profit groups are incorporated into some courses. Real-world engineering design culminates in a required major design experience in the senior year, which draws upon prior course work and focuses on technical and non-technical issues and expectations of professional practice. Other aspects of the program include opportunities for laboratory and research experience, integrated information technology content, development of communication skills and a sense of community between students and the faculty.

The B.S. in Environmental Engineering requires a minimum of 125 credits. Students are encouraged to pursue minors or focus areas in other disciplines that complement their engineering experience. International education and work experiences are also encouraged. Students should consult their advisors early in their program in order to plan accordingly.

ENVIRONMENTAL ENGINEERING PROGRAM EDUCATIONAL OBJECTIVES

Graduates of the program are expected to:

1. Practice environmental engineering, use their program knowledge in other areas, or enter graduate school;
2. Apply engineering principles and an understanding of environmental issues to analysis, design, construction, management, and preservation of engineered and natural systems;
3. Participate in comprehensive design activities carried out in interdisciplinary settings that involve applying current and emerging practices in environmental engineering;
4. Actively participate in professional and/or community-based service (local, national or global) that benefits the profession and the public;
5. Be capable of effective leadership and communication;

6. Be capable of professional licensure, and eager and able to engage in further study and professional development;
7. Consider the social, economic, and environmental aspects as part of the engineering solution and problem definition.

PLAN OF STUDY

THE CURRICULUM FOR THE B.S. IN ENVIRONMENTAL ENGINEERING

First Year	Credits	
	Fall	Spring
CE 003 Intro to Civil & Envir Engr	2	
CHEM 031 General Chemistry 1	4	
ENGS 001 Written Expression	3	
HSS Elective ¹	3	
MATH 021 Calculus I	4	
CHEM 032 General Chemistry 2		4
CS 020 Programming for Engineers		3
ENGR 002 Graphical Communication		2
MATH 022 Calculus II		4
PHYS 030 Physics Problem Solving I (Optional)		0-1
PHYS 031 Physics for Engineers I		4
Year Total:	16	17-18
Sophomore		
	Fall	Spring
BIOL 001 Principles of Biology	4	
CE 010 Geomatics ²	4	
MATH 121 Calculus III	4	
STAT 143 Statistics for Engineering	3	
HSS Elective ¹	3	
CE 001 Statics ²		3
CE 132 Environmental Systems ²		3
EE 100 Electrical Engr Concepts		4
MATH 124 Linear Algebra		3
MATH 271 Adv Engineering Mathematics		3
Year Total:	18	16

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Junior	Credits	
	Fall	Spring
CE 100 Mechanics of Materials	3	
CE 133 Transportation Systems	3	
CE 134 Sustainable Eng. Economics	3	
CE 160 Hydraulics	4	
CE 151 Water & Wastewater Engineering		3
CE 180 Geotechnical Principles		4
GEOL 001 Earth System Science or PSS 161 Fundamentals of Soil Science		4
ME 040 Thermodynamics		3
HSS Elective ¹		3
Year Total:	13	17
Senior	Credits	
	Fall	Spring
CE 254 Environmental Quantitative Anyl Science/Tech Elec ³	4	
Env Design Electives ⁴	3	3
Env Prof Electives ⁵	3	3
HSS Electives ¹	3	3
CE 175 Senior Design Project		3
Year Total:	16	12
Total Credits in Sequence:	125-126	

⁴ Typical Design electives include CE 251, CE 253, CE 256, CE 261, CE 265, CE 284, CE 285 and some CE 295 courses (consult advisor).

⁵ Professional electives include all Design electives, CE 191, CE 192, and any 200-level CE course.

¹ Required Humanities and Social Science (HSS): fifteen credits of approved HSS electives, including three credits of D1 and three credits of D1 or D2. Six HSS credits must be from the same offering department (e.g. ANTH or GEOG).

² Pre-Engineering Technical (PET) requirements: MATH 021 and MATH 022, CHEM 031, PHYS 031 and CS 020. All PET courses must be completed with C- or better before any sophomore engineering courses may be taken.

³ Science/Tech elective: ME 042, PSS 264, PSS 266, PSS 268, PSS 269 or PSS 161 (if not previously taken), or any 100-level or above course in engineering or BIOL, CHEM, GEOL, PHYS.