ENVIRONMENTAL ENGINEERING, BS

Department Chair

Dr. Andria Costello Staniec, 151G Link Hall, 315-443-1057, costello@syr.edu

Program Director

Dr. Svetoslava Todorova, 151Link Hall, 315-443-2557, stodorov@syr.edu

Environmental Engineering Faculty

Riyad S. Aboutaha, Elizabeth Carter, Ruth Chen, Andria Costello Staniec, Charles T. Driscoll Jr., Chris E. Johnson, Min Liu, Yizhi Liu, Eric M. Lui, Sinead Mac Namara, Aaron Mohammed, Dawit Negussey, Zhao Qin, Fabrizio Sabba, Baris Salman, Yilei Shi, Svetoslava Todorova, John Trimmer, Kun-Hao Yu, Teng Zeng

The mission of the Civil and Environmental Engineering Department is to promote learning and the creation, dissemination, and application of knowledge in civil and environmental engineering through integration of teaching, scholarship, and service.

The goal of the Civil and Environmental Engineering Department is to prepare students for engineering practice, advanced study, and lifelong learning in civil and environmental engineering. Graduates are expected to be proficient in the fundamentals of sustainable engineering analysis and design and understand the importance and methods of effective communication. Students are encouraged to use the extensive international network and educational resources of Syracuse University and the Syracuse community to broaden and enhance the quality of their university education.

Environmental Engineering B.S. Program Educational Objectives

The program educational objectives of the Bachelor of Science in Environmental Engineering in the Department of Civil and Environmental Engineering at Syracuse University describe what graduates of the program are expected to attain within a few years of graduation. Syracuse University environmental engineering graduates will:

1. Secure and maintain employment in industry, government, and non-governmental organizations and/or pursue graduate education or research in environmental engineering and related fields.
2. Engage in professional development through continuing education and trainings related to their professional goals, including pursuit of licensure as appropriate.
3. Incorporate social, environmental, ethical, and public safety considerations in their professional activities, reflecting a diverse, global, and changing environment.
4. Assume positions with increasing responsibilities and demonstrate leadership within multidisciplinary teams.
5. Embrace emerging technology, using sound engineering judgment, to apply knowledge appropriately to serve their community, society, and profession.

Environmental Engineering Description

The B.S. degree program in environmental engineering emphasizes the application of engineering and science principles to the preservation and management of the environment. It provides a strong background in the basic and engineering sciences and a variety of courses in several environmental areas, including water and wastewater treatment, solid and hazardous waste management, air pollution control, transport and fate of pollutants, and environmental chemistry and microbiology. The program allows students to pursue a series of elective courses suited to individual interests and goals, as well as to obtain minors in a variety of subject areas. Double-majors with geography, economics, political science and policy studies are possible without any additional coursework.

This program is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.

Adjustments in the program can be made to accommodate transfer students from accredited two- and four-year institutions so they may develop their programs of study as soon as possible after admission.

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.

Environmental Engineering Curriculum

Year 1		
Fall		**Credits**
MAT 295	Calculus I	4
CHE 106	General Chemistry Lecture I	3
CHE 107	General Chemistry Laboratory I	1
ECS 101	Introduction to Engineering and Computer Science	3
WRT 105	Studio 1: Practices of Academic Writing	3
FYS 101	First Year Seminar	1
SS/HUM Elective		3
	Credits	**18**
Spring		
MAT 296	Calculus II	4
CHE 116	General Chemistry Lecture II	3
CHE 117	General Chemistry Laboratory II	1
PHY 211	General Physics I	3

PHY 221	General Physics Laboratory I	1
CEE 198	Computer-aided Drafting, Design, and Modeling	3
SS/HUM Elective		3
	Credits	**18**
Year 2		
Fall		
MAT 397	Calculus III	4
ECS 104	Engineering Computational Tools	3
ECS 221	Statics	3
CEE 273	Introduction to Geomatics and GIS	3
	Credits	**13**
Spring		
MAT 485	Differential Equations and Matrix Algebra for Engineers	3
CEE 274	Sustainability in Civil and Environmental Systems	3
WRT 205	Studio 2: Critical Research and Writing	3
Select one of the following:		4
EAR 203	Earth System Science	
EAR 104 & EAR 105	Earth Sciences Laboratory and Earth Science	
CEE 325	Mechanics of Materials	3
	Credits	**16**
Year 3		
Fall		
CEE 327	Prin of Fluid Mechanics	4
CEE 337	Introduction to Geotechnical Engineering	4
CEE 341	Introduction to Environmental Engineering	3
Professional Elective		3
	Credits	**14**
Spring		
CEE 329	Probability, Statistics and Risk for Civil and Environmental Engineering	4
CEE 352	Water Resources Engineering	4
CEE 472	Applied Env Microbiology	3
GEO 383	Geographic Information Systems	4
SS/HUM Elective		3
	Credits	**18**
Year 4		
Fall		
CEE 442	Treatment Processes in Environmental Engineering	3
CEE 562	Air Resources	3
Professional Elective		3
SS/HUM Elective		3
Select one of the following: or Technical Elective:		3
Only one (CHE 346, CEE 326, ECS 222, ELE 231 or MAE 251) is required, the other must be Technical Elective		
ELE 231	Electrical Engineering Fundamentals	
CEE 326	Engineering Materials	
CHE 346	Physical Chemistry I	
	Credits	**15**
Spring		
CEE 471	Environmental Chemistry and Analysis	3
CEE 475	Civil and Environmental Engineering Design	4
Technical Elective		3
Free Elective		3
Select one of the following: or Technical Elective:		3
Only one (CHE 346, CEE 326, ECS 222, ELE 231 or MAE 251) is required, the other must be Technical Elective		
ECS 222	Dynamics	
ELE 231	Electrical Engineering Fundamentals	
MAE 251	Thermodynamics	
	Credits	**16**
	Total Credits	**128**