

# **UNDERGRADUATE MINOR IN ENVIRONMENTAL ENGINEERING**

offered by the  
ABET-Accredited Program in Environmental Engineering  
Department of Civil and Environmental Engineering and Geodetic Science

## **Introduction**

An undergraduate Minor in Environmental Engineering is offered by the ABET-Accredited Program in Environmental Engineering within the Department of Civil and Environmental Engineering and Geodetic Science. At least 20 hours must be taken; three courses totaling 10 hours are required, and at least 10 hours are to be selected from a list of elective courses.

## **Rationale**

Environmental pollution is pervasive. Graduates from many undergraduate programs at OSU will encounter environmental engineering-related pollution problems in their job setting. Most likely are graduates from chemistry, ecology, environmental science, geology, microbiology, physics, statistics, and zoology, in addition to other engineering departments/programs. The proposed Minor in Environmental Engineering will introduce students in those fields to the problem-solving methods and procedures used in environmental engineering. A wide range of topics will be addressed, e.g., sustainability, pollution prevention, air and water quality modeling, control technologies for air, water, and solid waste pollution, environmental health engineering, water and environmental chemistry, ecological engineering, and hazardous and radioactive waste management. Students can select from elective courses most appropriate to their major field.

## **Purpose**

The purpose of the proposed Minor is to allow students from a wide range of undergraduate majors to obtain an introductory background in sustainability, pollution prevention, environmental modeling, and pollution control technologies most appropriate to their major field.

## **Benefits for Students**

By taking the Minor in Environmental Engineering, students should add considerably to their major program skills, and become more valuable to their future employer. Science majors will gain an understanding of engineering problem-solving methods and procedures, as well as standard pollution control technologies. Other engineering majors will become more aware of the environmental effects of technologies in their major field, and how to reduce these effects.

## **Curriculum Requirements**

Detailed information on required and elective courses is provided in the attached Table. A total of at least 20 hours must be taken to fulfill the Minor in Environmental Engineering. Three courses are required for a total of 10 credit hours, with the remaining 10 hours or more to be selected from a list of elective courses.

Prerequisites to take the 10 hours of required courses (including CE520) generally are Chemistry 122 or 125 and Mathematics 152. Thereafter, the required course CE520 is a prerequisite for most of the elective courses, allowing students from a wide variety of majors to take the Minor in Environmental Engineering.

The three required courses cover such fundamental topics as sustainability, pollution prevention, environmental and occupational health engineering, air pollution modeling and control, water quality modeling, noise pollution, radiological health engineering, hazardous waste engineering, water treatment, wastewater treatment, and water chemistry. Elective courses allow expansion on all of these topics, as well as introducing ecological engineering, solid waste management, and other specialized areas of environmental engineering.

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Undergraduate students not enrolled in the ABET-accredited program in environmental engineering who wish to earn a Minor in Environmental Engineering must take **at least 20 hours** from the courses listed below.

**REQUIRED COURSES (10 hours):\*\*\***

Course Number	Title	Credit Hours	Prerequisites	Quarter Offered
CE 511	Introduction to Environmental Engineering	3	Chem 122 or 125 and Math 152	SP
CE 520	Design of Treatment Facilities	4	Chem 122 or 125	SP
CE 610	Analysis of Natural and Polluted Waters	3	Chem 122 or 125 and Math 152	AU

**ELECTIVE COURSES (at least 10 hours)\*\*\***

Course No.	Title	Credit Hours	Prerequisites	Quarter Offered
CE 618	Ecological Engineering and Science	4	Jr. standing with at least one course in one of the following subject areas: biology, ecology, engineering, or geology.	WI
CE 620	Treatment Plant Design Laboratory	2	CE 610; prereq: CE 520	WI
CE 711	Biological Processes for Used Water Treatment	4	CE 520 or equiv.	WI
CE 714	Hazardous Waste Management	3	CE 520	SP(odd yrs)
CE 717	Municipal and Industrial Solid Waste Management	4	Prereq or concur: CE 520	SP
CE 719	Water Quality Modeling	3	CE 520 or equiv with written permission of instructor	AU (even yrs)
CE 771	Radioactive Waste Management	3	Nuclr En 505 or Nuclr En 606 or permission of instructor	AU
ChBE 771	Air Pollution	3	Senior standing in engineering or permission of the instructor	WI
ChBE 772	Principles of Sustainable Engineering	3	Senior standing in engineering or permission of the instructor	SP

\*\*\*Because CE520 is required in the civil engineering program, students in that program must take an additional 4 credit hours of the listed Elective Courses to fulfill the Minor