

# ENVIRONMENTAL ENGINEERING - MASTER OF SCIENCE IN ENVIRONMENTAL ENGINEERING

Environmental engineering at New Mexico State University provides unique educational and research opportunities at the graduate level in the fields of water quality, aquatic chemistry, environmental microbiology, water treatment, water pollution control, wastewater treatment reclamation and reuse, desalination, membrane processes, industrial, hazardous, and solid waste management, groundwater remediation, contaminant fate and transport, resource recovery from waste streams, air pollution control, and nanotechnologies in environmental applications. Therefore, course offerings emphasize basic engineering and scientific principles, as well as the design and application of environmental engineering unit operations and processes. Special topics and thesis research are closely matched with faculty expertise and the professional goals of graduate students. The programs of study are specifically designed for individual students, taking advantage of not only the program capabilities, but also of the complementary activities of the university as a whole as well as the student's professional experience and work environment.

Graduate students satisfy degree requirements in environmental engineering by completing specific core course work. Course work in the graduate program includes the following:

- water and wastewater treatment
- solid and hazardous waste systems design
- environmental chemistry
- environmental microbiology
- environmental contaminant analysis
- industrial pollution control
- fate and transport of pollutants in engineered and natural systems
- water quality in surface water and groundwater systems
- advanced water treatment

Additional topics of interest to the students are offered through special topics classes and by courses taught outside of the College of Engineering.

The Master of Science (M.S.) program in Environmental Engineering requires either a thesis or non-thesis practice-oriented experience. The thesis track consists of a minimum of 30 semester credit hours, including 6 credit hours of thesis. The non-thesis track is designed primarily for students who are working full-time in engineering practice, but is also available to students working part-time. This track consists of 30 semester credit hours, including 6 credit hours of an engineering practicum (ENVE 598 Special Research Programs) of which up to 3 credit hours can be earned for a professional engineering design experience. Transfer credit for courses taken elsewhere is evaluated on an individual basis. Up to 6 semester hours of graduate level courses may be used to satisfy M.S. degree requirements provided that the credits were not used towards another degree.

## Required Curriculum

The graduate environmental engineering program of the Civil Engineering Department expects all M.S. students to meet certain requirements in pursuit of an advanced degree. Some of these requirements are related to the quantity, level, and quality of coursework. This Graduate Catalog details what is expected as a minimum for graduation, but it is up to the student and his/her advisor and graduate committee to determine the program of study for the student. The student and his/her advisor will create this program of study in the first semester of graduate work.

Students desiring to work toward an advanced degree in environmental engineering must have completed undergraduate preparation similar to that required for a Bachelor of Science degree in an ABET accredited engineering program or must have adequate background, as determined by the graduate faculty of the program. The background courses listed below may be required if the student did not take a similar course at the undergraduate level, as determined by the graduate faculty of the program.

Environmental engineering faculty will form a committee for every entering student. The faculty will evaluate the student's record and determine which deficiencies or core courses, if any, are needed by the student. The required curriculum consists of 12 credit hours of core courses, 6 credit hours of Master's Thesis (thesis track) or Special Research Programs (non-thesis track), and 12 credit hours of elective courses. For all professional non-thesis programs, the department head will review the committee's decision.

Prefix	Title	Credits
<b>Background Courses</b>		
C E 356	Fundamentals of Environmental Engineering	
C E 382	Hydraulic and Hydrologic Engineering	
ENVE 456	Environmental Engineering Design	
<b>Core Courses</b>		<b>12</b>
ENVE 550	Aquatic Chemistry	
ENVE 551	Unit Processes/Operation of Water Treatment	
ENVE 552	Unit Processes/Operation of Wastewater Treatment	
ENVE 557	Surface Water Quality Modeling	
<b>Thesis or Professional Experience <sup>1</sup></b>		<b>6</b>
ENVE 598	Special Research Programs	
or ENVE 599	Master's Thesis	
<b>Elective Courses <sup>2</sup></b>		<b>12</b>
<b>Total Credits</b>		<b>30</b>

<sup>1</sup> ENVE 598 Special Research Programs: practicum for students pursuing the non-thesis track. ENVE 599 Master's Thesis: required for students pursuing the thesis track.

<sup>2</sup> Elective courses may be taken from any department and must be approved by the student's advisor and graduate committee.

## Professional Development Electives for the Non-Thesis Track (outside the College of Engineering)

For students pursuing the non-thesis track, a minimum of 6 credit hours in graduate-level communications, management, economics, or other relevant disciplines are required as part of the 12 elective credit hour

requirement. These courses will be selected by the student and must be approved by the student's advisor and graduate committee.