

# MASTER OF SCIENCE IN ENVIRONMENTAL ENGINEERING

The Master of Science in Environmental Engineering is a research and thesis-based graduate degree program oriented toward students who wish to develop more knowledge in multiple areas of environmental engineering. The program provides students with opportunities to gain experience in a variety of environmental engineering domains, including water and wastewater treatment, water resources engineering, indoor and outdoor air quality, hazardous waste management, environmental health and safety and industrial hygiene, and environmental sustainability.

The program is intended for preparation for advanced engineering practice rooted in the principles of physics, chemistry, biology, and mathematics to develop and analyze solutions to environmental problems, including air and water pollution control, water and wastewater treatment systems design, climate change, resource depletion, and more. Students are expected to conduct research at a rigorous level above and beyond the coursework-only Master of Engineering in Environmental Engineering degree program. Students must complete an oral defense of their written thesis to satisfy program requirements.

Students with a variety of academic backgrounds are eligible to apply for the program, including those with undergraduate degrees in engineering disciplines (e.g., civil, chemical, or mechanical engineering) and also non-engineering but related disciplines (e.g., environmental science, biology, chemistry, geology, or others). All admitted students are expected to have completed undergraduate coursework or equivalent in chemistry, physics, mathematics through differential equations, and fluid mechanics. If students have not completed these courses, they may be required to take proficiency courses in their first year of study or in the summer before their first year of study. Each applicant will be evaluated on a case-by-case basis during the application review process to determine any proficiency course requirements.

Up to 9 credit hours of 400-level undergraduate coursework may be included in the program with adviser approval.

## Curriculum

Code	Title	Credit Hours
<b>Required Courses</b>		<b>(12)</b>
Select minimum of 12 credit hours from the list below:		12
ENVE 404	Water and Wastewater Engineering	3
ENVE 463	Introduction to Air Pollution Control	3
ENVE 501	Environmental Chemistry	3
ENVE 506	Chemodynamics	3
ENVE 513	Biotechnological Processes in Environmental Engineering	3
ENVE 522 or ENVE 422	Global Environmental Change and Sustainability Analysis	3
ENVE 523 or ENVE 423	Geoenvironmental Engineering	3
ENVE 528	Modeling of Environmental Systems	3
ENVE 542	Physicochemical Processes in Environmental Engineering	3
<b>Statistics/Data Analysis Requirement</b>		<b>(3)</b>
Select 3 credit hours from the list below:		3
CAE 523 or MATH 474 or MATH 564 or MMAE 500 or BME 533 or STAT 514	Statistical Analysis of Engineering Data Probability and Statistics Regression Data Driven Modeling Biostatistics Applied Computational Statistics for Analytics	3
<b>Major Electives</b>		<b>(6)<sup>1</sup></b>
Select a minimum of 6 credit hours of major electives from the list of required courses or from the list below:		6
ENVE 495	Environmental Capstone Design	3
ENVE 503 or ENVE 403	Occupational and Environmental Health and Safety	3
ENVE 543 or ENVE 444	Carbon Capture, Utilization, and Storage	3
ENVE 561	Design of Environmental Engineering Processes	3
ENVE 576	Indoor Air Pollution	3

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ENVE 577	Design of Air Pollution Control Devices	3	
ENVE 578	Physical and Chemical Processes for Industrial Gas Cleaning	3	
ENVE 580	Hazardous Waste Engineering	3	
<b>General Electives</b>			<b>(3-5) <sup>1</sup></b>
Select 3 to 5 credit hours of general electives <sup>2</sup>			3-5
<b>Thesis Research</b>			<b>(6-8)</b>
ENVE 591	Research and Thesis M.S.	6-8	

**Total Credit Hours: 32**

<sup>1</sup> Up to 9 credit hours of 400-level courses can be applied to the degree program

<sup>2</sup> General electives can be taken in CAE, CHE, CHEM, EG, ENVE, MMAE, SAM or other disciplines with advisor approval. If 6 hours of thesis credits (591) are taken, then a total of 5 hours of general elective coursework is required; if 8 hours of thesis credits (591) are taken, then a total of 3 hours of general elective coursework is required.