

ENVIRONMENTAL ENGINEERING - MASTER OF SCIENCE (MS)

The Master of Science in the Environmental Engineering Program focuses on fundamental and applied understanding of the processes that govern our natural and engineered environmental systems. The program of over 35 research and instructional faculty members and about 70 graduate students covers topics ranging from drinking and wastewater treatment, water re-use, ecosystem processes, fate and transport of contaminants, alternative energy, air quality, sustainability and global engineering.

For more information, visit the Environmental Engineering Program (<https://www.colorado.edu/even/prospective-students/>) website.

Bachelor's–Accelerated Master's Degree Program

Students may earn this degree as part of the bachelor's–accelerated master's (BAM) degree program, which allows currently enrolled CU Boulder undergraduate students the opportunity to earn a bachelor's and master's degree in a shorter period of time.

For more information, see the Accelerated Master's tab for the associated bachelor's degree(s): BSEV in Environmental Engineering (<https://catalog.colorado.edu/undergraduate/colleges-schools/engineering-applied-science/programs-study/civil-environmental-architectural-engineering/environmental-engineering-bachelor-science-bsev/#acceleratedmasterstext>)

Requirements

General Requirements

The following course requirements are subject to change; for the most current information, visit the Program's Curriculum and Courses (<http://www.colorado.edu/even/prospective-students/graduate-studies/curriculum-and-courses/>) webpage.

Students must complete at least 30 credit hours.

For students who have undertaken prior graduate study, up to 9 hours of relevant graduate-level coursework may be transferred to meet the course requirements for the MS degree, following the rules established by the Graduate School for transfer credit.

Degree Plans

Requirements for the Master of Science in environmental engineering can be fulfilled in two ways.

Plan I: Thesis Option

In addition to 24 credit hours of coursework, candidates complete 4–6 credit hours of thesis credit with a sum of course and thesis credit of at least 30 hours. Additionally, the successful completion and defense of an MS thesis is required.

Plan II: Non-Thesis Option

In addition to 24 credit hours of coursework, candidates complete an additional 6 credit hours of elective courses or independent study.

Course Requirements

Code	Title	Credit Hours
Required Common Core		6
CVEN 5464	Environmental Engineering Processes	3
CVEN 5404	Water Chemistry	3
or CHEM 5151	Atmospheric Chemistry	
Emphasis Area		12-18
See list below		
Electives		0-9
Elective courses will be determined in consultation with the student's faculty advisor.		
Environmental Engineering Graduate Seminar		0
Two semesters of Environmental Engineering graduate seminar, a non-credit seminar requiring attendance at 2/3 of the seminars each semester for satisfactory completion.		
Plan I: Thesis Option		4-6
Thesis Credits		
Plan II: Non-Thesis Option		6
Additional elective or independent study credits		

Requirements for Recommended Emphasis Areas

General Environmental Engineering Emphasis

Code	Title	Credit Hours
CVEN 5484	Integrative Environmental and Molecular Microbiology	3
MCEN 5131	Air Pollution Control Engineering	3
CVEN 5524	Drinking Water Treatment	3
or CVEN 5534	Wastewater Treatment	
Select one of the following:		
CVEN 5537	Numerical Methods in Civil Engineering	3
or CVEN 5454	Statistical Methods for Natural and Engineered Systems	
Total Credit Hours		12

Drinking Water, Wastewater and Water Reuse Treatment Emphasis

Code	Title	Credit Hours
CVEN 5484	Integrative Environmental and Molecular Microbiology	3
CVEN 5524	Drinking Water Treatment	3
CVEN 5534	Wastewater Treatment	3
Select one of the following:		
CVEN 5537	Numerical Methods in Civil Engineering	3
or CVEN 5454	Statistical Methods for Natural and Engineered Systems	
Total Credit Hours		12

Natural Waters Emphasis

Code	Title	Credit Hours
CVEN 5424	Environmental Organic Chemistry	3
CVEN 5353	Groundwater Hydrology	3
CVEN 5333	Physical Hydrology	3

CVEN 5323	Applied Stream Ecology	3
CVEN 5537	Numerical Methods in Civil Engineering	3
or CVEN 5454	Statistical Methods for Natural and Engineered Systems	

Total Credit Hours **15**

Global Engineering Emphasis

Code	Title	Credit Hours
CVEN 5919	Global Development for Engineers	3
CVEN 5939	Global Engineering and Hazard Resilience Practicum	3
CVEN 5969	Water, Sanitation, and Hygiene	3
CVEN 5484	Integrative Environmental and Molecular Microbiology	3
CVEN 5524	Drinking Water Treatment	3
or CVEN 5534	Wastewater Treatment	
or MCEN 5131	Air Pollution Control Engineering	

Total Credit Hours **15**

Air Quality Emphasis

Code	Title	Credit Hours
MCEN 5131	Air Pollution Control Engineering	3
MCEN 5021	Introduction to Fluid Dynamics	3
or CVEN 5313	Environmental Fluid Mechanics	

Select one of the following:

MCEN 5141	Indoor Air Pollution	3
or MCEN 5161	Aerosols	
or CVEN 5484	Integrative Environmental and Molecular Microbiology	

Select one of the following:

CVEN 5537	Numerical Methods in Civil Engineering	3
or CVEN 5454	Statistical Methods for Natural and Engineered Systems	

Total Credit Hours **12**

Water & Engineering Management Emphasis

Code	Title	Credit Hours
CVEN 5564	Water Profession: Communication and Utility Finance	3
CVEN 5574	Water Utility Management: Current Issues and Future Challenges	3
CVEN 5584	Water Profession: Leadership and Management	3

Learning Outcomes

By the completion of the program, students will be able to:

- Demonstrate and exercise technical training in core environmental engineering topics that form the foundation of modern-day environmental engineering problems and solutions.
- Successfully conduct research that answers questions of interest to the environmental engineering community and that employs appropriate research methods.

- Effectively communicate and present research to academic and public audiences.