

# Climate Science and Engineering, MS

## Overview

The Master of Science in Climate Science and Engineering is offered jointly by the College of Engineering and the College of Science. The program provides training in the fundamental scientific processes that underpin the structure and dynamics of the climate, as well as the engineering strategies and technologies required for decarbonization and adaptation to climate change.

Incoming students will typically hold a bachelor's degree in a science, engineering, or related field. The program is designed to prepare students for climate-facing positions in the public or private sectors and can serve as a springboard for students interested in pursuing doctoral-level research. Students must take at least 12 semester hours of College of Science courses and at least 12 semester hours of College of Engineering courses and includes a report, thesis, or coursework option.

Degree Requirements	With Project	With Thesis	Coursework Only
Required core courses	20 SH	20 SH	20 SH
Other electives	8 SH	4 SH	12 SH
Master of Science report/thesis	4 SH	8 SH	
Minimum semester hours required	32 SH	32 SH	32 SH

## Program Requirements

- Concentrations and course offerings may vary by campus and/or by program modality. Please consult with your advisor or admissions coach for the course availability each term at your campus or within your program modality.
- Certain options within the program may be *required* at certain campuses or for certain program modalities. Please consult with your advisor or admissions coach for requirements at your campus or for your program modality.

Complete all courses and requirements listed below unless otherwise indicated. In order to ensure a balance of training across science and engineering, students must take at least 12 semester hours of College of Science courses (starting with EEMB, ENVR) and at least 12 semester hours of College of Engineering courses (starting with CIVE, EECE, ENSY, MATL, ME, SBSY) from the core requirements and restricted elective course options.

## Core Requirements

Code	Title	Hours
Complete 20 semester hours from the core requirements listed below; any core course not used to meet this core course requirement can be taken as a restricted elective:		20
CIVE 5150 or ENVR 5150	Climate and Atmospheric Change	
CIVE 5275	Life Cycle Assessment of Materials, Products, and Infrastructure	
CIVE 5281	Coastal Dynamics and Design	
CIVE 5363	Climate Science, Engineering Adaptation, and Policy	
CIVE 5365	Climate Technologies for Decarbonization, Mitigation, and Adaptation	
CIVE 5366	Air Quality Engineering and Science	
CIVE 5670 or ENVR 5670	Global Biogeochemistry	
CIVE 7110	Critical Infrastructure Resilience	
ENVR 5350	Sustainable Energy and Climate Solutions	
ENVR 5600	Coastal Processes, Adaptation, and Resilience	
ENVR 5800	Climate Adaptation and Nature-Based Solutions	

## Options

Complete one of the following options:

### COURSEWORK OPTION

Code	Title	Hours
Complete 12 semester hours from the restricted electives course list below.		12

**REPORT OPTION**

Code	Title	Hours
CIVE 7945 or EEMB 8984	Master's Project Research	4
Complete 8 semester hours from the restricted electives course list below.		8

**THESIS OPTION**

Code	Title	Hours
Complete CIVE 7945 and CIVE 7990 for 8 semester hours or complete EEMB 8984 twice for 8 semester hours:		8
CIVE 7945 and CIVE 7990	Master's Project and Thesis	
EEMB 8984	Research (Completed twice)	
Complete 4 semester hours from the restricted electives course list below.		4

In addition to completing the thesis course, College of Engineering students must successfully complete the thesis submission process, including securing committee and Graduate School of Engineering signatures and submission of an electronic copy of their MS thesis to ProQuest.

**Restricted Electives**

Code	Title	Hours
CIVE 5280	Remote Sensing of the Environment	
CIVE 7100	Time Series and Geospatial Data Sciences	
CIVE 7282	Coastal and Hydraulic Modeling	
CIVE 7385	Public Transportation	
CIVE 7392	Special Topics in Environmental Engineering	
EECE 5670	Sustainable Energy: Materials, Conversion, Storage, and Usage	
ENSY 5000	Fundamentals of Energy System Integration	
ENSY 5100	Hydropower	
ENSY 5200	Energy Storage Systems	
ENSY 5300	Electrochemical Energy Storage	
ENSY 5500	Smart Grid	
ENSY 5585	Wind Energy Systems	
ENVR 5210	Environmental Planning	
ENVR 5220	Ecosystem-Based Management	
ENVR 5563	Advanced Spatial Analysis	
INTL 5100	Climate and Development	
LAW 7634	Energy Law and Policy	
LPSC 7312	Cities, Sustainability, and Climate Change	
MATL 6270	Principles, Devices, and Materials for Energy Storage and Energy Harvesting	
ME 5685	Solar Thermal Engineering	
PPUA 5238	Climate Change and Global Urbanization	
PPUA 5264	Energy Democracy and Climate Justice: Technology, Policy, and Social Change	
PPUA 5268	International Environmental Policy	
SBSY 5100	Sustainable Design and Technologies in Construction	
SBSY 5200	Sustainable Engineering Systems for Buildings	

**Program Credit/GPA Requirements**

32 total semester hours required

Minimum 3.000 GPA required