

# MASTER OF CIVIL AND ENVIRONMENTAL ENGINEERING (MCEE) DEGREE

## Program Learning Outcomes for the MCEE Degree

Upon completing the MCEE degree, students will be able to:

1. Demonstrate a solid foundation in civil and environmental engineering at the graduate level.
2. Demonstrate professional written and oral communication skills.

## Requirements for the MCEE Degree

The MCEE degree is a non-thesis master's degree. For general university requirements, please see [Non-Thesis Master's Degrees](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-non-thesis-masters-degrees/) (<https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-non-thesis-masters-degrees/>). For additional requirements, regulations, and procedures for all graduate programs, please see [All Graduate Students](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/) (<https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/>). Students pursuing the MCEE degree must complete:

- A minimum of 11 courses (30-32 credit hours, depending on course selection) to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (graduate semester credit hours, coursework at the 500-level or above).
- A minimum of 24 graduate semester credit hours must be taken at Rice University.
- A minimum of 24 graduate semester credit hours must be taken in standard or traditional courses (with a course type of lecture, seminar, laboratory, lecture/laboratory).
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- A maximum of 2 courses (6 graduate semester credit hours) from transfer credit. For additional departmental guidelines regarding transfer credit, see the [Policies](#) (p. 3) tab.
- The requirements for one area of specialization (see below for areas of specialization). The MCEE degree program offers two areas of specialization:
  - [Civil Engineering](#) (p. 1), **or**
  - [Environmental Engineering](#) (p. 2).
- A minimum of one graduate seminar (CEVE 601 or CEVE 602).
- A final project (CEVE 590).
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum program GPA of 3.00 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree.

The Master of Civil and Environmental Engineering (MCEE) degree is a professional non-thesis master's degree. Students who have a BS or BA degree in any field of engineering or related study may apply. Depending on their background, some students may need to fulfill prerequisites or take remedial engineering courses to earn the MCEE degree. For more information, see the [Professional Master's Program](#) tab on the [department website](https://cee.rice.edu/academics/graduate-programs/master-civil-and-environmental-engineering/) (<https://cee.rice.edu/academics/graduate-programs/master-civil-and-environmental-engineering/>).

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor or, where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's [Official Certifier](https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/) (<https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/>). Additionally, these course substitutions must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

## Summary

Code	Title	Credit Hours
Total Credit Hours for the MCEE Degree		30-32

## Degree Requirements

Code	Title	Credit Hours
<b>Area of Specialization</b>		
Select 1 of the following Areas of Specialization:		27-28
	Civil Engineering	
	Environmental Engineering	
<b>Seminar</b>		
Select 1 course from the following:		1
CEVE 601	SEMINAR	
CEVE 602	SEMINAR	
<b>MCEE Final Project</b>		
CEVE 590	MCEE SPECIAL STUDY <sup>1</sup>	2-3
<b>Total Credit Hours</b>		<b>30-32</b>

## Footnotes and Additional Information

- <sup>1</sup> The professional master's final project is overseen by a Civil and Environmental Engineering department faculty member.

## Areas of Specialization

Students must complete a minimum of 9 courses (27-28 credit hours, depending on course selection) to satisfy the requirements for the MCEE degree program's area of specialization.

### Area of Specialization: Civil Engineering

Code	Title	Credit Hours
<b>Core Requirements</b>		
Advanced Courses		
Select 6 courses from the following:		18
CEVE 500 / MECH 500	ADVANCED MECHANICS OF MATERIALS	
CEVE 524	TIME-DEPENDENT SYSTEM RELIABILITY METHODS AND APPLICATIONS	
CEVE 525	SUSTAINABLE INFRASTRUCTURE MATERIALS	
CEVE 527 / MECH 527	PHYSICS GUIDED MACHINE LEARNING & DATA DRIVEN MODELING FEM	
CEVE 531	DESIGN AND BEHAVIOR OF CONCRETE BUILDINGS AND BUILDING ELEMENTS	

CEVE 537	DESIGN OF PRESTRESSED CONCRETE STRUCTURES
CEVE 539	ADVANCED STRUCTURAL ANALYSIS
CEVE 541	DESIGN AND BEHAVIOR OF STRUCTURAL STEEL BUILDINGS AND BUILDING ELEMENTS
CEVE 545	ORIGAMI ENGINEERING
CEVE 554 / BIOE 554 / MECH 554	COMPUTATIONAL FLUID MECHANICS
CEVE 560	BRIDGE ENGINEERING AND EXTREME EVENTS
CEVE 562	INFRASTRUCTURE RESILIENCE TO MULTIPLE HAZARDS
CEVE 571	PRINCIPLES OF SOIL MECHANICS AND FOUNDATION ENGINEERING
CEVE 576 / MECH 576	STRUCTURAL DYNAMIC SYSTEMS
CEVE 578	EARTHQUAKE ENGINEERING
CEVE 592	MODELING AND ANALYSIS OF NETWORKED SYSTEMS
CEVE 596	SYSTEM IDENTIFICATION OF DYNAMIC SYSTEMS WITH MACHINE LEARNING
CEVE 678 / MECH 678	APPLIED STOCHASTIC MECHANICS
CEVE 679 / MECH 679	APPLIED MONTE CARLO ANALYSIS
<b>Elective Requirements</b>	
Directed Civil Engineering Electives	
<i>Select 2 courses from the Core Requirements or from the following:</i> 6	
CEVE 514	COASTAL HAZARDS IN A CHANGING CLIMATE
CEVE 517 / MECH 517	FINITE ELEMENT ANALYSIS
CEVE 543	STATISTICAL-PHYSICAL METHODS FOR HYDROCLIMATE EXTREMES AND CATASTROPHES
CEVE 555 / CMOR 523	NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS
CMOR 522	NUMERICAL ANALYSIS
COMP 540	STATISTICAL MACHINE LEARNING
COMP 557 / ELEC 557	ARTIFICIAL INTELLIGENCE
MECH 502	VIBRATIONS
RCEL 506	APPLIED STATISTICS AND DATA SCIENCE FOR ENGINEERING LEADERS
Professional Development Electives	
<i>Select 1 course from the following:</i> 3-4	
ANTH 532	THE SOCIAL LIFE OF CLEAN ENERGY
CEVE 505 / ENGI 505	ENGINEERING ECONOMICS AND PROJECT MANAGEMENT
CEVE 506	INTRODUCTION TO ENVIRONMENTAL LAW
CEVE 507	ENERGY AND THE ENVIRONMENT
ECON 601	ENERGY ECONOMICS I

ENGI 501	WORKPLACE COMMUNICATION FOR PROFESSIONAL MASTER'S STUDENTS IN ENGINEERING
ENGI 529 / CEVE 529	ETHICS AND ENGINEERING LEADERSHIP
NSCI 511	SCIENCE POLICY, AND ETHICS
NSCI 610 / ENGI 610	MANAGEMENT FOR SCIENCE AND ENGINEERING
RCEL 501	ENGINEERING MANAGEMENT & LEADERSHIP THEORY AND APPLICATION
RCEL 502	ENGINEERING PROJECT MANAGEMENT
RCEL 503	ENGINEERING PRODUCT MANAGEMENT IN INDUSTRY 4.0
RCEL 504	ETHICAL-TECHNICAL LEADERSHIP
RCEL 505	ENGINEERING ECONOMICS FOR ENGINEERING LEADERS
RCEL 542	PROFESSIONAL COMMUNICATION FOR ENGINEERING LEADERS
<b>Total Credit Hours</b> 27-28	

**Area of Specialization: Environmental Engineering**

Code	Title	Credit Hours
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**Core Requirements**

Advanced Coursework	18
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*Select 6 courses from the following:*

CEVE 502	SUSTAINABLE DESIGN
CEVE 509	HYDROLOGY AND WATER RESOURCES ENGINEERING
CEVE 511	ATMOSPHERIC CHEMISTRY AND CLIMATE
CEVE 514	COASTAL HAZARDS IN A CHANGING CLIMATE
CEVE 518	ENVIRONMENTAL HYDROGEOLOGY
CEVE 534	FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT
CEVE 535	PHYSICAL CHEMICAL PROCESSES FOR WATER QUALITY CONTROL
CEVE 536	ENVIRONMENTAL BIOTECHNOLOGY AND BIOREMEDIATION
CEVE 543	STATISTICAL-PHYSICAL METHODS FOR HYDROCLIMATE EXTREMES AND CATASTROPHES
CEVE 547	WATER-ENERGY NEXUS
CEVE 550	ENVIRONMENTAL ORGANIC CHEMISTRY

**Elective Requirements**

Engineering Science and Technology	6
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*Select 2 courses from the following:*

BIOS 558	FUNDAMENTALS OF QUANTITATIVE ENVIRONMENTAL HEALTH RISK ASSESSMENT
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CEVE 501	CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE
CEVE 510	PRINCIPLES OF ENVIRONMENTAL ENGINEERING
CEVE 516	FUNDAMENTALS OF GROUNDWATER FLOW
CEVE 520	ENVIRONMENTAL REMEDIATION RESTORATION
CEVE 523	APPLIED SUSTAINABLE PLANNING AND DESIGN
CEVE 526	SMART MATERIALS FOR THE ENVIRONMENT
CEVE 543	STATISTICAL-PHYSICAL METHODS FOR HYDROCLIMATE EXTREMES AND CATASTROPHES
CEVE 544	ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY
CEVE 592	MODELING AND ANALYSIS OF NETWORKED SYSTEMS
CEVE 684 / STAT 684	ENVIRONMENTAL RISK ASSESSMENT & HUMAN HEALTH
EEPS 584	DATA SCIENCE ENVIRONMENTAL AND GEOSCIENCES
EEPS 632	FLUID FLOW AND TRANSPORT PROCESSES IN EARTH, ENVIRONMENTAL AND PLANETARY SCIENCES.
RCEL 506	APPLIED STATISTICS AND DATA SCIENCE FOR ENGINEERING LEADERS
STAT 685	ENVIRONMENTAL STATISTICS AND DECISION MAKING
Sustainable Resource Management	
<i>Select 1 course from the following:</i> 3-4	
ANTH 532	THE SOCIAL LIFE OF CLEAN ENERGY
BIOS 580	SUSTAINABLE DEVELOPMENT AND REPORTING
CEVE 505 / ENGI 505	ENGINEERING ECONOMICS AND PROJECT MANAGEMENT
CEVE 506	INTRODUCTION TO ENVIRONMENTAL LAW
CEVE 507	ENERGY AND THE ENVIRONMENT
CEVE 529 / ENGI 529	ETHICS AND ENGINEERING LEADERSHIP
COMP 540	STATISTICAL MACHINE LEARNING
COMP 557 / ELEC 557	ARTIFICIAL INTELLIGENCE
ECON 601	ENERGY ECONOMICS I
ENGI 501	WORKPLACE COMMUNICATION FOR PROFESSIONAL MASTER'S STUDENTS IN ENGINEERING
NSCI 511	SCIENCE POLICY, AND ETHICS
NSCI 610 / ENGI 610	MANAGEMENT FOR SCIENCE AND ENGINEERING
RCEL 501	ENGINEERING MANAGEMENT & LEADERSHIP THEORY AND APPLICATION

RCEL 502	ENGINEERING PROJECT MANAGEMENT
RCEL 503	ENGINEERING PRODUCT MANAGEMENT IN INDUSTRY 4.0
RCEL 504	ETHICAL-TECHNICAL LEADERSHIP
RCEL 505	ENGINEERING ECONOMICS FOR ENGINEERING LEADERS
RCEL 542	PROFESSIONAL COMMUNICATION FOR ENGINEERING LEADERS

Total Credit Hours

27-28

## Policies for the MCEE Degree

### Department of Civil and Environmental Engineering Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Civil and Environmental Engineering publishes a graduate program handbook, which can be found here: [https://gradhandbooks.rice.edu/2025\\_26/Civil\\_Environmental\\_Engineering\\_Graduate\\_Handbook.pdf](https://gradhandbooks.rice.edu/2025_26/Civil_Environmental_Engineering_Graduate_Handbook.pdf).

### Admission

Applicants pursuing graduate education in structural engineering, structural mechanics, and infrastructure systems engineering should have a BS in Civil Engineering with a significant emphasis on structural engineering, but students with other undergraduate degrees may apply if they have adequate preparation in mathematics, mechanics, and structural analysis and design.

Applicants pursuing graduate education in environmental engineering or hydrology should have a BS or BA in related areas of science and engineering and preparation in mathematics, science, and engineering or related courses. A BS degree in engineering or a degree in natural science is preferred.

Admission into a professional program is granted separately from admission into a research and thesis program. Professional degree programs terminate when the degree is awarded. Students who wish to continue graduate study after completing a professional program must apply for admission into a research program.

### Transfer Credit

For Rice University's policy regarding transfer credit, see [Transfer Credit \(https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/#transfer\)](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/#transfer). Some departments and programs have additional restrictions on transfer credit. Requests for transfer credit must be approved for Rice equivalency by the appropriate academic department offering the Rice equivalent course (corresponding to the subject code of the course content) and by the Office of Graduate and Postdoctoral Studies (GPS). Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.

### Departmental Transfer Credit Guidelines

Students pursuing the MCEE degree should be aware of the following departmental transfer credit guideline:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the degree.

## **Additional Information**

For additional information, please see the Civil and Environmental Engineering website: <https://cee.rice.edu/>.

## **Opportunities for the MCEE Degree Fifth-Year Master's Degree Option for Rice Undergraduate Students**

In certain situations and with some terminal master's degree programs, Rice students have an option to pursue a master's degree by adding an additional fifth year to their four years of undergraduate studies.

Advanced Rice undergraduate students in good academic standing typically apply to the master's degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master's degree program. A plan of study will need to be approved by the student's undergraduate major advisor and the master's degree program director.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor's degree and the master's degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this *Undergraduate - Graduate Concurrent Enrollment* opportunity, including specific information on the registration process can be found [here \(https://ga.rice.edu/undergraduate-students/academic-opportunities/undergraduate-graduate-concurrent-enrollment/\)](https://ga.rice.edu/undergraduate-students/academic-opportunities/undergraduate-graduate-concurrent-enrollment/).

Rice undergraduate students completing studies in science and engineering may have the option to pursue the Master of Civil and Environmental Engineering (MCEE) degree. For additional information, students should contact their undergraduate major advisor and the (MCEE) chair of the department graduate studies committee.

## **George R. Brown School of Engineering and Computing Scholarships for Professional Master's Degrees in Engineering**

The George R. Brown School of Engineering and Computing Scholarships for Professional Master's Degrees in Engineering were established by the Dean of the School of Engineering and Computing to encourage outstanding Rice undergraduate engineering students to pursue a professional master's degree at Rice.

## **Rice Global Forum (RGF)**

The Rice Global Forum (RGF) is a group of industry professionals plus Rice faculty who gather regularly to discuss topics that define their interests. They sponsor the Engineering Competition each year and give out scholarships that are derived from membership dues. The scholarships are geared toward professional master's and terminal research master's (MS) students.

## **Additional Information**

For additional information, please see the Civil and Environmental Engineering website: <https://cee.rice.edu/>.