MASTER OF CIVIL AND ENVIRONMENTAL ENGINEERING (MCEE) DEGREE IN THE FIELD OF CIVIL ENGINEERING

Program Learning Outcomes for the MCEE Degree in the field of Civil Engineering

Upon completing the MCEE degree in the field of Civil Engineering, 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 in the field of Civil Engineering

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/). 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/).

Students pursuing the MCEE degree in the field of Civil Engineering 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. 2) tab.
- 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/).

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/). Additionally, these 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

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours for the MCEE Degree in the field of Civil Engineering</td>
<td>30-32</td>
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</table>

Degree Requirements

Core Requirements

Advanced Courses

Select 6 courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>CEVE 500 / MECH 500</td>
<td>ADVANCED MECHANICS OF MATERIALS</td>
<td>18</td>
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<tr>
<td>CEVE 524</td>
<td>TIME-DEPENDENT SYSTEM RELIABILITY METHODS AND APPLICATIONS</td>
<td></td>
</tr>
<tr>
<td>CEVE 527 / MECH 527</td>
<td>PHYSICS GUIDED MACHINE LEARNING &amp; DATA DRIVEN MODELING FEM</td>
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<tr>
<td>CEVE 531</td>
<td>DESIGN AND BEHAVIOR OF CONCRETE BUILDINGS AND BUILDING ELEMENTS</td>
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<tr>
<td>CEVE 541</td>
<td>DESIGN AND BEHAVIOR OF STRUCTURAL STEEL BUILDINGS AND BUILDING ELEMENTS</td>
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<tr>
<td>CEVE 554 / BIOE 554 / MECH 554</td>
<td>COMPUTATIONAL FLUID MECHANICS</td>
<td></td>
</tr>
<tr>
<td>CEVE 560</td>
<td>BRIDGE ENGINEERING AND EXTREME EVENTS</td>
<td></td>
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<tr>
<td>CEVE 562</td>
<td>INFRASTRUCTURE RESILIENCE TO MULTIPLE HAZARDS</td>
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<tr>
<td>CEVE 571</td>
<td>PRINCIPLES OF SOIL MECHANICS AND FOUNDATION ENGINEERING</td>
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</tr>
<tr>
<td>CEVE 576 / MECH 576</td>
<td>STRUCTURAL DYNAMIC SYSTEMS</td>
<td></td>
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<tr>
<td>CEVE 578</td>
<td>EARTHQUAKE ENGINEERING</td>
<td></td>
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<tr>
<td>CEVE 592</td>
<td>MODELING AND ANALYSIS OF NETWORKED SYSTEMS</td>
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<tr>
<td>CEVE 596</td>
<td>SYSTEM IDENTIFICATION OF DYNAMIC SYSTEMS WITH MACHINE LEARNING</td>
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<tr>
<td>CEVE 678 / MECH 678</td>
<td>APPLIED STOCHASTIC MECHANICS</td>
<td></td>
</tr>
<tr>
<td>CEVE 679 / MECH 679</td>
<td>APPLIED MONTE CARLO ANALYSIS</td>
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</table>

Seminar
Select 1 course from the following:

- CEVE 601 SEMINAR
- CEVE 602 SEMINAR

Elective Requirements

Directed Civil Engineering Electives

Select 2 courses from the Core Requirements or from the following:

- CEVE 517 / MECH 517: FINITE ELEMENT ANALYSIS
- CEVE 555 / CMOR 523: NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS
- CMOR 522: NUMERICAL ANALYSIS
- MECH 502: VIBRATIONS
- RCEL 506: APPLIED STATISTICS AND DATA SCIENCE FOR ENGINEERING LEADERS

Professional Development Electives

Select 1 course from the following:

- 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
- CEVE 528 / ENGI 528: ENGINEERING ECONOMICS
- 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

MCEE Final Project

- CEVE 590: MCEE SPECIAL STUDY

Total Credit Hours: 30-32

Footnotes and Additional Information

1 The professional master’s final project is overseen by a Civil and Environmental Engineering department faculty member.
Opportunities for the MCEE Degree in the field of Civil Engineering

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/).

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 Scholarships for Professional Master's Degrees in Engineering

The George R. Brown School of Engineering Scholarships for Professional Master's Degrees in Engineering were established by the Dean of the School of Engineering 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/