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 (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 (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 credit hours) to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- 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 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 department website (http://www.ceve.rice.edu).

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/degeworks/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>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours for the MCEE Degree in the field of Civil Engineering</td>
<td>30</td>
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Degree Requirements

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<td></td>
<td>Core Requirements</td>
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<td>Advanced Courses</td>
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<tr>
<td>CEVE 500 / MECH 500</td>
<td>ADVANCED MECHANICS OF MATERIALS</td>
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<tr>
<td>CEVE 503 / MECH 520</td>
<td>NONLINEAR FINITE ELEMENT ANALYSIS</td>
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<td>CEVE 519 / MECH 519</td>
<td>ELASTICITY, PLASTICITY AND DAMAGE MECHANICS</td>
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<td>CEVE 524</td>
<td>TIME-DEPENDENT SYSTEM RELIABILITY METHODS AND APPLICATIONS</td>
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<td>CEVE 527 / MECH 527</td>
<td>COMPUTATIONAL STRUCTURAL MECHANICS AND 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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<td>CEVE 538 / MSNE 538</td>
<td>COMPUTATIONAL NANOSCIENCE FOR GREEN INFRASTRUCTURE</td>
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<td>CEVE 541</td>
<td>DESIGN AND BEHAVIOR OF STRUCTURAL STEEL BUILDINGS AND BUILDING ELEMENTS</td>
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<td>CEVE 554 / BIOE 554 / MECH 554</td>
<td>COMPUTATIONAL FLUID MECHANICS</td>
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<td>CEVE 560</td>
<td>BRIDGE ENGINEERING AND EXTREME EVENTS</td>
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<td>CEVE 571</td>
<td>PRINCIPLES OF SOIL MECHANICS AND FOUNDATION ENGINEERING</td>
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<td>CEVE 576 / MECH 576</td>
<td>STRUCTURAL DYNAMIC SYSTEMS</td>
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<td>CEVE 578</td>
<td>EARTHQUAKE ENGINEERING</td>
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<td>CEVE 592</td>
<td>MODELING AND ANALYSIS OF NETWORKED SYSTEMS</td>
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<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>
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<td>CEVE 679 / MECH 679</td>
<td>APPLIED MONTE CARLO ANALYSIS</td>
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<td>CEVE 601</td>
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<td>CEVE 602</td>
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<td>Elective Requirements</td>
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<td>Directed Civil Engineering Electives</td>
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</table>
Select 2 from the Core Requirements or from the following: 6

- CAAM 550 NUMERICAL ANALYSIS I
- CEVE 517 / MECH 517 FINITE ELEMENT ANALYSIS
- CEVE 555 / CAAM 536 NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS
- MECH 502 VIBRATIONS
- MECH 665 ANALYSIS OF VIBRATIONS IN NONLINEAR SYSTEMS

Professional Development Electives

Select 1 from the following: 3

- ANTH 532 THE SOCIAL LIFE OF CLEAN ENERGY
- 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

MCEE Final Project

CEVE 590 MCEE SPECIAL STUDY 1 2

Total Credit Hours 30

Footnotes and Additional Information

1 The professional masters final project is overseen by a Civil and Environmental Engineering department faculty member.

Policies for the MCEE Degree in the field of Civil Engineering

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/2019_20/Civil_Environmental_Engineering_Graduate_Handbook.pdf

Admission

Applicants pursuing graduate education in structural engineering, structural mechanics, and geotechnical 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 (ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/#transfer). Some departments and programs have additional restrictions on transfer credit. 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 in the field of Civil Engineering or Environmental Engineering should be aware of the following departmental transfer credit guidelines:

- 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.
- Request for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

Additional Information

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

Opportunities for the MCEE Degree in the field of Civil Engineering

Fifth-Year Master's Degree Option for Rice Undergraduate Students

Rice students have an option to pursue the Master of Civil and Environmental Engineering (MCEE) degree by adding an additional fifth year to their four undergraduate years of science and engineering studies.

Advanced Rice undergraduate students in good academic standing may apply to the MCEE 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 advisor and the (MCEE) chair of the department graduate studies committee.

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

- must complete the requirements for their 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 of the 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 possibility, including specific information on the registration process can be found here (ga.rice.edu/undergraduate-
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://ceve.rice.edu/