

MASTER OF ENGINEERING MANAGEMENT AND LEADERSHIP (MEML) DEGREE

Program Learning Outcomes for the MEML Degree

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

1. *Employ ethical-technical decision making*; understand the susceptibility of engineering teams and organizations to ethical failure and devise creative technical solutions that are constrained by ethics-based boundaries.
2. *Lead and manage engineering teams*; excel at hybrid communications (i.e. to both technical and non-technical persons), managing projects, leading engineering teams, and inspiring people.
3. *Evaluate the economic viability of technology products and ideas*; apply key principles of engineering entrepreneurship to determine if a technical product or idea is valuable and economically viable.
4. *Solve advanced engineering problems*; have a graduate-level understanding of key disciplinary engineering courses. Engineering leaders will lead teams of engineers in a way that leverages the varying degrees of engineering training, from the undergraduate to graduate level. They should have a fundamental understanding and appreciation for the deeper technical skills that graduate-level engineers add to a team.

Requirements for the MEML Degree

The MEML 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 MEML degree must complete:

- A minimum of 10 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 6 credit hours from graduate semester credit hours as transfer credit. For additional program guidelines regarding transfer credit, see the *Policies* tab.
- The requirements for one area of specialization (see below for areas of specialization). The MEML degree program offers ten areas of specialization:
 - [Bioengineering](#) (p. 2), **or**
 - [Chemical and Biomolecular Engineering](#) (p. 3), **or**

- [Civil and Environmental Engineering](#) (p. 3), **or**
- [Computational and Applied Mathematics](#) (p. 3), **or**
- [Computer Science](#) (p. 3), **or**
- [Data Science](#) (p. 3), **or**
- [Electrical and Computer Engineering](#) (p. 3), **or**
- [Materials Science and Nanoengineering](#) (p. 3), **or**
- [Mechanical Engineering](#) (p. 3), **or**
- [Statistics](#) (p. 3).

- 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.

Students in the MEML degree program and in either of the two cohorts (on-campus or online) will be allowed to take up to 3 courses (9 credit hours) in the other modality (online or on-campus) with permission from the Engineering Management and Leadership Program Advisor.

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 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 Required for the MEML Degree		30

Degree Requirements

Code	Title	Credit Hours
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Core Requirements

RCEL 501	ENGINEERING MANAGEMENT & LEADERSHIP THEORY AND APPLICATION	3
RCEL 502	ENGINEERING PROJECT MANAGEMENT	3
RCEL 503	ENGINEERING PRODUCT MANAGEMENT IN INDUSTRY 4.0	3
RCEL 504	ETHICAL-TECHNICAL LEADERSHIP	3
RCEL 505	ENGINEERING ECONOMICS FOR LEADERS	3
RCEL 506 / STAT 550	APPLIED STATISTICS AND DATA SCIENCE FOR ENGINEERING LEADERS	3

Area of Specialization

Select 1 from the following Areas of Specialization (see Areas of Specialization below):¹ 9-11

Bioengineering
Chemical and Biomolecular Engineering
Civil and Environmental Engineering
Computational and Applied Mathematics
Computer Science
Data Science
Electrical and Computer Engineering
Materials Science and Engineering

Mechanical Engineering		
Statistics		
Capstone Requirement		
RCEL 507	MASTER'S IN ENGINEERING MANAGEMENT AND LEADERSHIP CAPSTONE	3
Total Credit Hours		30-32

Footnotes and Additional Information

¹ Select 3 courses (9-11 credit hours, depending on course selection) from courses offered by the George R. Brown School of Engineering (or from an engineering-centered focus area) as an Area of Specialization to provide technical depth. Courses offered by the George R. Brown School of Engineering include the following: BIOE, CAAM, CEVE, CHBE, COMP, DSCI, ELEC, ENGI, GLHT, INDE, MECH, MSNE, RCEL, SSPB, or STAT. Engineering-centered focus areas (such as Data Science) or student-designed areas of specialization may also be approved. Departmental approval is required for areas of specialization. See below for typically approved areas of specialization.

Areas of Specialization

Students must complete a minimum of 3 courses (9-11 credit hours, depending on course selection) from one of the following typically approved Areas of Specialization or from a student-designed Area of Specialization. Department approval is required for areas of specialization.

Area of Specialization: Bioengineering

Code	Title	Credit Hours
BIOE 508 / SSPB 503	SYNTHETIC BIOLOGY	3
BIOE 536	FRONTIERS IN IMMUNOENGINEERING	3
BIOE 539	APPLIED STATISTICS FOR BIOENGINEERING AND BIOTECHNOLOGY	3
Total Credit Hours		9

Area of Specialization: Chemical and Biomolecular Engineering

Code	Title	Credit Hours
CHBE 501	FLUID MECHANICS AND TRANSPORT PROCESSES	3
CHBE 560 / MSNE 560	COLLOIDAL AND INTERFACIAL PHENOMENA	3
CHBE 590	KINETICS, CATALYSIS, AND REACTION ENGINEERING	3
Total Credit Hours		9

Area of Specialization: Civil and Environmental Engineering

Code	Title	Credit Hours
CEVE 500 / MECH 500	ADVANCED MECHANICS OF MATERIALS	3
CEVE 503 / MECH 520	NONLINEAR FINITE ELEMENT ANALYSIS	3

CEVE 527 / MECH 527	PHYSICS GUIDED MACHINE LEARNING & DATA DRIVEN MODELING FEM	3
Total Credit Hours		9

Area of Specialization: Computational and Applied Mathematics

Code	Title	Credit Hours
CAAM 519	COMPUTATIONAL SCIENCE I	3
CAAM 550	NUMERICAL ANALYSIS I	3
CAAM 554	ITERATIVE METHODS FOR SYSTEMS OF EQUATIONS AND UNCONSTRAINED OPTIMIZATION	3
Total Credit Hours		9

Area of Specialization: Computer Science

Code	Title	Credit Hours
COMP 502 / ELEC 502 / STAT 502	NEURAL MACHINE LEARNING I	3
COMP 540	STATISTICAL MACHINE LEARNING	4
COMP 542	LARGE-SCALE MACHINE LEARNING	3
Total Credit Hours		10

Area of Specialization: Data Science

Code	Title	Credit Hours
COMP 614	COMPUTER PROGRAMMING FOR DATA SCIENCE	3
COMP 665	DATA VISUALIZATION	3
STAT 613	STATISTICAL MACHINE LEARNING	3
Total Credit Hours		9

Area of Specialization: Electrical and Computer Engineering

Code	Title	Credit Hours
ELEC 519	DATA SCIENCE AND DYNAMICAL SYSTEMS	3
ELEC 520 / COMP 520	DISTRIBUTED SYSTEMS	4
ELEC 524 / COMP 524	MOBILE AND WIRELESS NETWORKING	4
Total Credit Hours		11

Area of Specialization: Materials Science and Nanoengineering

Code	Title	Credit Hours
MSNE 510	SCALING CONCEPTS IN 2D MATERIALS AND POLYMER PHYSICS	3
MSNE 511	MATERIALS CHARACTERIZATION FROM NANO TO MACRO	3
MSNE 513	3D PRINTING AND ADDITIVE MANUFACTURING: THEORY AND APPLICATIONS	3
Total Credit Hours		9

Area of Specialization: Mechanical Engineering

Code	Title	Credit Hours
MECH 505	NUMERICAL METHODS FOR ENGINEERS	3
MECH 517 / CEVE 517	FINITE ELEMENT ANALYSIS	3
MECH 554 / BIOE 554 / CEVE 554	COMPUTATIONAL FLUID MECHANICS	3
Total Credit Hours		9

Area of Specialization: Statistics

Code	Title	Credit Hours
STAT 518	PROBABILITY	3
STAT 519	STATISTICAL INFERENCE	3
STAT 542	SIMULATION	3
Total Credit Hours		9

Policies for the MEML Degree**Admission**

Admission to graduate study in Engineering Management and Leadership is open to qualified students holding a BS or a BA degree in a quantitative field from an accredited institution. The MEML degree governing committee will evaluate the previous academic record and credentials of each applicant individually, and will make all admissions decisions.

The MEML degree program exists as two distinct offerings, with both an on-campus and online option. Students must apply to either the on-campus or online MEML degree program and are admitted into one program cohort or the other. The admission standards are the same for both programs.

Applications for the Engineering Management and Leadership degree are due by October 30 for spring admission and April 30 for fall admission. When completing the online application, candidates will be asked to submit the following items electronically to the Graduate Admissions Committee by each program's deadline outlined above.

- Transcripts from all undergraduate and graduate schools attended.
- All student applicants must upload an unofficial transcript to the application and also send an official copy of their transcripts.
- A Statement of Purpose is required for all applicants. This statement should clearly and succinctly summarize the applicant's past academic and professional experience and achievements, discuss their motivation for seeking the MEML degree, and explain or articulate their future goals. The applicant should also briefly discuss any other factors they might want the Admission Committee to consider while reviewing their application (e.g., personal background, work experience, leadership roles, etc.).
- At least three letters of recommendation should be requested from at least three individuals, preferably professors, research advisors, or direct supervisors, who are familiar with the applicant's technical skills in engineering, science, or computer science. An applicant may submit more than three letters of recommendation, but no less than three must be submitted with their application.
- Graduate Record Examination (GRE) scores are optional for all applicants. If an applicant has relevant industrial experience, the Admissions Committee will factor in work experience and the

recommendation of the applicant's current supervisor in lieu of any GRE scores when evaluating the application. Furthermore, at least one of the recommendation letters must be from a supervisor and should speak to the applicant's technical and communication promise/ability and any relevant industrial experience should be highlighted in the applicant's resume. If taking the GRE, applicants should have their scores sent directly to Rice University using code: 6609 (GRE subject tests are not required).

- TOEFL/IELTS scores are required for all international students that have not conferred a degree from an English-speaking University. The code to send the electronic scores is: 6609
 - TOEFL score, the minimum is 90 on the iBT and 600 on the paper-based TOEFL.
 - IELTS score, the minimum is 7.
 - This requirement is automatically waived for eligible applicants who upload their transcript from an English-speaking University into this application showing a degree in-progress or conferred.
- CV/Resume - applicants should upload their most current Curriculum Vitae or Resume.
- The application fee of \$85. The fee can be paid either by credit card or electronic check. At this time, the Rice Center for Engineering Leadership is not considering application fee waivers. Payment of the application fee cannot be deferred until time of enrollment. The application will be processed only when the application fee has been received.

Financial Aid

- No financial aid is available from Rice University for students in the MEML degree 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. Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.

Program Transfer Credit Guidelines

Students pursuing the MEML degree should be aware of the following program-specific transfer credit guidelines:

- No more than 6 credit hours from another U.S. or international universities of similar standing as Rice may apply towards the degree. Transfer coursework must be comparable in content and depth to the corresponding course at Rice, and must not have counted toward another degree.
- Requests for transfer credit will be considered by the Engineering Management and Leadership Graduate Committee Chair and the instructor of the equivalent Rice course.

Additional Information

- For additional information, please see the Engineering Leadership website: <https://www.rcelconnect.org/>

Opportunities for the MEML Degree**Additional Information**

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