

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

- [Civil and Environmental Engineering](#) (p. 3), *or*
 - [Computational Applied Mathematics and Operations Research](#) (p. 2), *or*
 - [Computer Science](#) (p. 3), *or*
 - [Data Science](#) (p. 3), *or*
 - [Electrical and Computer Engineering](#) (p. 3), *or*
 - [Financial Engineering](#) (p. 3), *or*
 - [Industrial 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 (online or on-campus) will be allowed to take up to 3 courses (9 credit hours) in the other modality (on-campus or online) 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 | | 30-32 |

Degree Requirements

| Code | Title | Credit Hours |
|------|-------|--------------|
|------|-------|--------------|

Core Requirements ¹

| | | |
|---------------------|---|---|
| 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 ENGINEERING 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, 2} 9-11

| |
|---------------------------------------|
| Bioengineering |
| Chemical and Biomolecular Engineering |
| Civil and Environmental Engineering |

Area of Specialization: Data Science

| Code | Title | Credit Hours |
|---------------------------|--|--------------|
| COMP 614 | COMPUTER PROGRAMMING FOR DATA SCIENCE ¹ | 3 |
| COMP 665 | DATA VISUALIZATION | 3 |
| STAT 613 | STATISTICAL MACHINE LEARNING | 3 |
| Total Credit Hours | | 9 |

Footnotes and Additional Information

¹ It is highly recommended that students who are not proficient in Python take RCEL 506 prior to taking COMP 614.

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: Financial Engineering

| Code | Title | Credit Hours |
|---------------------------|--|--------------|
| STAT 621 | APPLIED TIME SERIES AND FORECASTING | 3 |
| STAT 649 | QUANTITATIVE FINANCIAL RISK MANAGEMENT | 3 |
| STAT 686 | MARKET MODELS | 3 |
| Total Credit Hours | | 9 |

Area of Specialization: Industrial Engineering

| Code | Title | Credit Hours |
|---------------------------|--|--------------|
| INDE 501 | FUNDAMENTALS OF INDUSTRIAL ENGINEERING | 3 |
| INDE 545 | PRESCRIPTIVE ANALYTICS | 3 |
| INDE 571 | PROBABILITY AND STATISTICAL INFERENCE | 3 |
| Total Credit Hours | | 9 |

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 |

Recommended Electives

The following courses are not required, but are highly recommended.

| Code | Title | Credit Hours |
|----------|--|--------------|
| RCEL 542 | PROFESSIONAL COMMUNICATION FOR ENGINEERING LEADERS | 3 |
| ENGI 615 | LEADERSHIP COACHING FOR ENGINEERS | 3 |

Policies for the MEML Degree**Engineering Management and Leadership Graduate Program Handbook**

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Rice Center for Engineering Leadership (RCEL) publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2023_24/Master_Engineering_Management_Leadership_On_Campus_Handbook.pdf

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 can be paid either by credit card or electronic check. At this time, the Rice Center for Engineering Leadership considers application fee waiver requests on a case-by-case basis and is typically afforded to students who have attended information sessions about the MEML degree. 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.
- Very limited scholarships are available for the MEML degree. To apply for a scholarship, please contact the Rice Center for Engineering Leadership directly by emailing rcel@rice.edu. Decisions are made by the Center and are final.

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 2 courses (6 credit hours) of credit 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.rice.edu/engineeringleaders> (<https://www.rice.edu/engineeringleaders/>)

Opportunities for the MEML Degree Additional Information

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