MASTER OF INDUSTRIAL ENGINEERING (MIE) DEGREE

Program Learning Outcomes for the MIE Degree

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

1. Build physical and mathematical models of complex systems that arise in real-world situations.
2. Understand the flow of material from manufacturing to warehouses to customers through physical or mathematical models.
3. Produce data-driven and implementable solutions that improve the efficiency of real-world systems.
4. Communicate the solutions and insights generated by the models to a non-technical audience.

Requirements for the MIE Degree

The MIE 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 MIE degree must complete:

- A minimum of 11 courses (31 credit hours) to satisfy degree requirements.
- A minimum of 31 credit hours of graduate-level study (graduate semester credit hours, coursework at the 500-level or above).
- A minimum of 9 courses (25 graduate semester credit hours), including the capstone course (INDE 590), 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 full-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. 2) tab.
- A capstone course (INDE 590), which includes a company-provided or research project related to the core requirements in the curriculum.[1]
- 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 Industrial Engineering (MIE) is a non-thesis master's degree intended for students who have completed a 4-year bachelor's program in engineering, or related field, and wish to join the workforce as practicing professionals, or continue on for further study. It offers preparation in advanced engineering topics in order to enhance an engineer's technical qualifications and increases competitiveness in the job market. The MIE degree program is open to students who have shown academic excellence in their undergraduate studies.

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 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 Required for MIE Degree		31

Degree Requirements

Code	Title	Credit Hours
Core Requirements [1]		
INDE 501	FUNDAMENTALS OF INDUSTRIAL ENGINEERING	3
Select a minimum of 1 course (or up to 2 courses) from the following: [2]		*3-6*
INDE 509	INTRODUCTION TO HUMAN FACTORS ENGINEERING	
MECH 503	COMPUTER AIDED DESIGN	
PSYC 535	HUMAN FACTORS/ERGONOMICS	
INDE 543	MANUFACTURING PROCESSES AND SYSTEMS	3
INDE 545	PRESCRIPTIVE ANALYTICS	3
INDE 571	PROBABILITY AND STATISTICAL INFERENCE	3
INDE 572	STOCHASTIC PROCESSES AND SIMULATION	3
Technical Elective Requirements		
Students must complete 4 courses (12 credit hours) from the George R. Brown School of Engineering and Computing [2,3]		*12*
Capstone Requirement		
INDE 590	MASTER'S IN INDUSTRIAL ENGINEERING CAPSTONE EXPERIENCE [1]	1
Total Credit Hours		**31**

Footnotes and Additional Information

1. MIE students are required to complete a capstone course (INDE 590), which includes a project related to the core requirements in the curriculum. With the approval of the course instructor, the student must prepare a final report for the project, and present it in class. Topics must be approved no later than the end of the fourth week of the semester.
2. Students must take at least 1 of the following courses as a Core Requirement: INDE 509, MECH 503, or PSYC 535. A student may take an additional course from INDE 509, MECH 503, or PSYC 535 (in addition to the Core Requirement) to fulfill degree program requirements as a Technical Elective. Students may take either INDE 509 or PSYC 535, but not both, to fulfill degree program requirements.

[3] Accepted subject codes from the course offerings in the George R. Brown School of Engineering and Computing include the following: BIOE, CEVE, CHBE, CMOR, COMP, DSCI, ELEC, ENGI, GLHT, INDE, MECH, MSNE, RCEL, SSPB, and STAT.

Proposed Plan-of-Study

The following plan-of-study represents a lockstep three-semester sequence in which students pursuing the MIE degree complete the required coursework.

Course	Title	Credit Hours
First Year		
1st Semester		
INDE 501	FUNDAMENTALS OF INDUSTRIAL ENGINEERING	3
INDE 545	PRESCRIPTIVE ANALYTICS	3
INDE 571	PROBABILITY AND STATISTICAL INFERENCE	3
	Credit Hours	**9**
2nd Semester		
Elective One	Technical Elective (Elective One) [1]	3
Elective Two	Technical Elective (Elective Two) [1]	3
INDE 572	STOCHASTIC PROCESSES AND SIMULATION	3
Select 1 from the following:		
INDE 509	INTRODUCTION TO HUMAN FACTORS ENGINEERING [2]	3
PSYC 535	HUMAN FACTORS/ERGONOMICS [2]	3
Elective Three	Technical Elective (Elective Three) [1, 2]	3
	Credit Hours	**12**
Second Year		
1st Semester		
Elective Four	Technical Elective (Elective Four) [1]	3
INDE 543	MANUFACTURING PROCESSES AND SYSTEMS	3
INDE 590	MASTER'S IN INDUSTRIAL ENGINEERING CAPSTONE EXPERIENCE	1
Select 1 from the following:		
MECH 503	COMPUTER AIDED DESIGN [2]	3
Elective Four	Technical Elective (Elective Four) [1, 2]	3
	Credit Hours	**10**
	Total Credit Hours	**31**

Footnotes and Additional Information

[1] Accepted subject codes from the course offerings in the George R. Brown School of Engineering and Computing include the following: BIOE, CEVE, CHBE, CMOR, COMP, DSCI, ELEC, GLHT, INDE, MECH, MSNE, SSPB, and STAT.

[2] Students must take at least 1 of the following courses as a Core Requirement: INDE 509, MECH 503, or PSYC 535. A student may take an additional course from INDE 509, MECH 503, or PSYC 535 (in addition to the Core Requirement) to fulfill degree program requirements as a Technical Elective. Students may take either INDE 509 or PSYC 535, but not both, to fulfill degree program requirements.

Policies for the MIE Degree

Industrial Engineering Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, Industrial Engineering publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2024_25/Industrial_Engineering_Graduate_Handbook.pdf.

Admission

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

Financial Aid

No financial aid is available from Rice University or the Industrial Engineering program for students in the MIE 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). 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.

Program Transfer Credit Guidelines

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

- No more than 2 courses (6 credit hours) of transfer credit from another U.S. or international universities of similar standing as Rice may apply towards the degree.
- Transfer courses 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 Industrial Engineering Graduate Committee Chair and the instructor of the equivalent Rice course.

Additional Information

For additional information, please see the Industrial Engineering website: https://engrprofmasters.rice.edu/.

Opportunities for the MIE 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/).

Rice undergraduate students completing studies in science and engineering may have the option to pursue the Master of Industrial Engineering (MIE) degree. For additional information, students should contact their undergraduate major advisor and the MIE program director.

Additional Information

For additional information, please see the Industrial Engineering website: https://engrprofmasters.rice.edu/.