

MASTER OF MECHANICAL ENGINEERING (MME) DEGREE

Program Learning Outcomes for the MME Degree

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

1. Demonstrate an advanced command of Mechanical Engineering fieldwork.
2. Communicate scientific ideas effectively in writing and when speaking.

Requirements for the MME Degree

The MME 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 MME degree must complete:

- A minimum of 10 courses (30 credit hours) 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 24 credit hours from departmental (MECH) course offerings, including the area of specialization.
- The requirements for one area of specialization. The MME degree program offers two areas of specialization:
 - [Aerospace Engineering](#) (p. 2), **or**
 - [Mechanical Engineering](#) (p. 2).
- 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 professional master's degree in Mechanical Engineering (MME) is a non-thesis degree program intended for students who have completed a 4-year bachelor's program in engineering and wish to join the workforce as practicing professionals, rather than pursuing a research oriented or academic career. It offers preparation in advanced engineering topics in order to enhance an engineer's technical qualifications and increases competitiveness in the job market.

The MME program is open to students who have shown academic excellence in their undergraduate studies. Students who have a BS or BA degree in any field of engineering or related study may apply, although

some may need to fulfill prerequisites or take remedial courses to earn the MME degree. Students may enroll on a full or part-time basis.

Lists of required and suggested courses are available from the department. Students should develop a specific plan of study based on their particular interests and discussions with their 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 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 the MME Degree		30

Degree Requirements

Code	Title	Credit Hours
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Core Requirements

<i>Select 4 courses from the following:</i>		12
MECH 501	DYNAMICS AND CONTROL OF MECHANICAL SYSTEMS	
or MECH 508 / CMOR 508 / ELEC 508	NONLINEAR SYSTEMS: ANALYSIS AND CONTROL	
MECH 517 / CEVE 517	FINITE ELEMENT ANALYSIS	
MECH 554 / BIOE 554 / CEVE 554	COMPUTATIONAL FLUID MECHANICS	
MECH 588 or MECH 598 / COMP 598 / ELEC 598	DESIGN OF MECHATRONIC SYSTEMS INTRODUCTION TO ROBOTICS	
MECH 594	INTRODUCTION TO AERONAUTICS	
MECH 599	CURRENT TOPICS IN MECHANICAL ENGINEERING	

Area of Specialization

<i>Select 1 of the following Areas of Specialization (see below for Areas of Specialization):</i>		6
Aerospace Engineering		
Mechanical Engineering		

Elective Requirements

<i>Select 4 courses from approved departmental (MECH) course offerings at the 500-level or above.¹</i>		12
Total Credit Hours		30

Footnotes and Additional Information

¹ Approved departmental course offerings are MECH course offerings at the 500-level or above taught by faculty with a tenure home or special teaching appointment in MECH. In exceptional cases, 2 courses, or a total of 6 credit hours, at the 500-level or above can be taken outside of the MECH department. This would require special approval from the department after reviewing the rigor and applicability of the class to the applicant's plan of study. A minimum of 30 credit hours at the 500-level or above is required to earn the MME degree. Regardless of the student's previously earned undergraduate degree at the time of entrance into the graduate program, no credit hours of research coursework may be permitted in lieu of the required coursework outlined above.

Students entering with a BS degree:

- 30 credit hours of coursework

Students entering with a BA degree (or other bachelor's degree):

- 30 credit hours of coursework

Areas of Specialization

Area of Specialization: Aerospace Engineering

Students pursuing the Aerospace Engineering area of specialization must complete:

Code	Title	Credit Hours
Select 2 courses from the following:		6
MECH 578	ORBITAL MECHANICS AND MISSION DESIGN	
MECH 590	AEROSPACE PROPULSION	
MECH 591	GAS DYNAMICS	
MECH 592 / NSCI 591	DESIGN FOR AEROSPACE ENVIRONMENTS	
MECH 596	INTRODUCTION TO FLIGHT MECHANICS	
MECH 691	INTRODUCTION TO HYPERSONIC AERODYNAMICS	
Total Credit Hours		6

Area of Specialization: Mechanical Engineering

Students pursuing the Mechanical Engineering area of specialization must complete:

Code	Title	Credit Hours
Select 2 courses from the following:		6
MECH 502	VIBRATIONS	
MECH 530	TRIBOMECHADYNAMICS	
MECH 575	INTRODUCTION TO HYDRODYNAMIC STABILITY	
MECH 582	CONVECTIVE HEAT TRANSFER	
MECH 584	MICROSCOPIC THERMODYNAMICS AND TRANSPORT	
MECH 587	INTERFACIAL PHENOMENA, CAPILLARITY, AND WETTING	
MECH 589	MICROFLUIDICS: FUNDAMENTALS AND APPLICATIONS	

MECH 597	NEUROMUSCULOSKELETAL MODELING AND SIMULATION
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Total Credit Hours	6
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Policies for the MME Degree
Department of Mechanical Engineering Graduate Program Handbook

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

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.

Departmental Transfer Credit Guidelines

Students pursuing the MME degree should be aware of the following departmental transfer credit guideline:

- 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.

Additional Information

For additional information, please see the Mechanical Engineering website: <https://mech.rice.edu/>.

Opportunities for the MME 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/) (<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 Mechanical Engineering (MME) degree. For additional information, students should contact their undergraduate major advisor and the MME program director.

Additional Information

For additional information, please see the Mechanical Engineering website: <https://mech.rice.edu/>.