

# BACHELOR OF ARTS (BA) DEGREE WITH A MAJOR IN MECHANICAL ENGINEERING

## Program Learning Outcomes for the BA Degree with a Major in Mechanical Engineering

Upon completing the BA degree with a major in Mechanical Engineering, students will demonstrate:

1. An ability to apply principles of engineering science design, and mathematics
2. An ability to communicate effectively with a range of audiences
3. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
4. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
5. An ability to use engineering judgment to draw conclusions
6. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

## Requirements for the BA Degree with a Major in Mechanical Engineering

For general university requirements, see Graduation Requirements ([ga.rice.edu/undergraduate-students/academic-policies-procedures/graduation-requirements](https://ga.rice.edu/undergraduate-students/academic-policies-procedures/graduation-requirements)). Students pursuing the BA degree with a major in Mechanical Engineering must complete:

- A minimum of 25 courses (68 credit hours) to satisfy major requirements. Note that the courses required to complete the major must be taken after 13 required **basic math and science (pre-requisite) courses** (31 credit hours).
- A minimum of 128 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.
- A minimum of 9 courses (28 credit hours) at the 300-level or above.

The BA degree program in mechanical engineering is highly flexible, involves less technical content than the BS, and allows students greater freedom to pursue areas of interest outside of engineering. The BA degree is not accredited by the Engineering Accreditation Commission of ABET.

Lists of courses, including general university requirements and the usual order in which students take them, are available from the department. The BA program mirrors the BSME program in the freshman and sophomore years, with the exceptions that MECH 331 and MECH 340 are not required. Specific major requirements are completed in the junior and senior years.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions

must be formally applied and entered into Degree Works by the major's Official Certifier (<https://registrar.rice.edu/facstaff/degreeworks/officialcertifier>.) 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 Major in Mechanical Engineering		68
Total Credit Hours Required for the BA Degree with a Major in Mechanical Engineering		128

### Degree Requirements

Code	Title	Credit Hours
<b>Basic Math and Science Courses (Pre-Requisites)</b>		
CHEM 121 & CHEM 123	GENERAL CHEMISTRY I and GENERAL CHEMISTRY LABORATORY I	4
CHEM 122 & CHEM 124	GENERAL CHEMISTRY II and GENERAL CHEMISTRY LABORATORY II	4
MATH 101 or MATH 105	SINGLE VARIABLE CALCULUS I AP/OTH CREDIT IN CALCULUS I	3
MATH 102 or MATH 106	SINGLE VARIABLE CALCULUS II AP/OTH CREDIT IN CALCULUS II	3
MATH 211	ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA	3
MATH 212	MULTIVARIABLE CALCULUS	3
MSNE 301	MATERIALS SCIENCE	3
PHYS 101 & PHYS 103	MECHANICS (WITH LAB) and MECHANICS DISCUSSION	4
PHYS 102 & PHYS 104	ELECTRICITY & MAGNETISM (WITH LAB) and ELECTRICITY AND MAGNETISM DISCUSSION	4
<b>Required Courses for Mechanical Engineering</b>		
Computational and Applied Mathematics		
CAAM 210	INTRODUCTION TO ENGINEERING COMPUTATION	3
CAAM 335	MATRIX ANALYSIS	3
CAAM 336	DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING	3
Mechanical Engineering Courses		
MECH 200	CLASSICAL THERMODYNAMICS	3
MECH 211 / CEVE 211	ENGINEERING MECHANICS	3
MECH 311 / CEVE 311	MECHANICS OF SOLIDS AND STRUCTURES	3
MECH 343	MODELING OF DYNAMIC SYSTEMS	4
MECH 371	FLUID MECHANICS I	3
MECH 401	MECHANICAL DESIGN APPLICATIONS	3
MECH 412	VIBRATIONS	3
MECH 420 / ELEC 436	FUNDAMENTALS OF CONTROL SYSTEMS	3
MECH 481	HEAT TRANSFER	3
<b>Total Credit Hours Required for the Major in Mechanical Engineering</b>		<b>68</b>

University Graduation Requirements ( <a href="http://ga.rice.edu/undergraduate-students/academic-policies-procedures/graduation-requirements">ga.rice.edu/undergraduate-students/academic-policies-procedures/graduation-requirements</a> ) *	60
Total Credit Hours	128

### Footnotes and Additional Information

\* Includes coursework completed as distribution credit, FWIS, LPAP, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The “hours outside of the major” requirement may include all of the above university requirements.

## Policies for the BA Degree with a Major in Mechanical Engineering

### Transfer Credit

For Rice University’s policy regarding transfer credit, see Transfer Credit ([ga.rice.edu/undergraduate-students/academic-policies-procedures/transfer-credit](http://ga.rice.edu/undergraduate-students/academic-policies-procedures/transfer-credit)). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university’s official list of transfer credit advisors on their website: <https://oaa.rice.edu>. Students are encouraged to meet with their academic program’s transfer credit advisor when considering transfer credit possibilities.

### Departmental Transfer Credit Guidelines

Students pursuing the major in Mechanical Engineering should be aware of the following departmental transfer credit guidelines:

- Requests 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 Mechanical Engineering website: <https://mech.rice.edu/>

## Opportunities for the BA Degree with a Major in Mechanical Engineering

### Academic Honors

The university recognizes academic excellence achieved over an undergraduate’s academic history at Rice. For information on university honors, please see Latin Honors ([ga.rice.edu/undergraduate-students/honors-distinctions/university](http://ga.rice.edu/undergraduate-students/honors-distinctions/university)) (*summa cum laude*, *magna cum laude*, and *cum laude*) and Distinction in Research and Creative Work ([ga.rice.edu/undergraduate-students/honors-distinctions/university](http://ga.rice.edu/undergraduate-students/honors-distinctions/university)). Some departments have department-specific Honors awards or designations.

### Fifth-Year Master’s Degree Option for Rice Undergraduate Students

Rice students have an option to pursue the Master of Mechanical Engineering (MME) 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 MME 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 MME 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 ([ga.rice.edu/undergraduate-students/academic-opportunities/undergraduate-graduate-concurrent-enrollment](http://ga.rice.edu/undergraduate-students/academic-opportunities/undergraduate-graduate-concurrent-enrollment)).

### Additional Information

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