

# MECH

## Mechanical Engineering

<b>WEB LINKS</b>	<a href="http://mech.rice.edu/undergrad">mech.rice.edu/undergrad</a>
<b>FRANK ADVICE</b>	Students interested in pursuing a degree in Mechanical Engineering are encouraged to declare their major early. See an adviser to create your degree plan.
<b>ADVICE FOR STUDENTS WITH AP CREDIT</b>	Students with AP credit for calculus are encouraged to take the MATH and CAAM sequences earlier than suggested in the sample degree plan.
<b>ALTERNATIVE CURRICULA</b>	Double majoring is not encouraged due to the large number of required classes in the B.S.M.E. degree. Students intending to double major should consult an adviser to develop an appropriate program of study.
<b>BS VERSUS BA</b>	Only the B.S. degree is accredited by the Engineering Accreditation Commission (EAC) of ABET, <a href="http://www.abet.org">www.abet.org</a> , and is the most direct route toward becoming a licensed professional engineer (PE). The B.A. is recommended for students who will pursue professional careers in medicine, law, or business immediately after their undergraduate education.
<b>NOT REQUIRED BUT HIGHLY RECOMMENDED COURSES</b>	MECH 403, Computer Aided Design



MECHANICAL

<b>RESEARCH</b>	Students are encouraged to speak with their professors directly regarding undergraduate research opportunities. To learn more about faculty research go to <a href="https://mech.rice.edu/research">https://mech.rice.edu/research</a> .
<b>INTERNSHIPS</b>	Most students participate in summer internships in industry, especially after sophomore and junior years. Students should register with the Center for Career Development ( <a href="http://ccd.rice.edu/">ccd.rice.edu/</a> ) and explore further opportunities on the CCD's RICElink, where potential employers post open positions and internships.
<b>STUDY ABROAD</b>	Study abroad is most feasible in the fall semesters of the sophomore and junior years. This avoids conflicts with lab classes (MECH 331, 332) and avoids conflicts with the year-long senior design sequence (MECH 407/408).
<b>PROFESSIONAL ORGANIZATIONS</b>	The American Society of Mechanical Engineers ( <a href="http://asme.rice.edu/">asme.rice.edu/</a> ) hosts industry representatives and organizes outreach, service and design projects. The American Institute of Aeronautics and Astronautics ( <a href="http://www.ruf.rice.edu/~aiaa/">www.ruf.rice.edu/~aiaa/</a> ) organizes activities for students interested in aerospace engineering. Many mechanical engineering students are also active in the Rice Engineers Without Borders chapter ( <a href="http://ewb.rice.edu/">ewb.rice.edu/</a> ). Leadership positions are often available to freshmen and sophomores in all of these organizations.
<b>INTERESTING COURSES FOR NON-MAJORS</b>	MECH 454 Computational Fluid Mechanics MECH 498 Introduction to Robotics MECH 594 Introduction to Aeronautics

# B.S. In Mechanical Engineering

**Specializations:** Aerospace engineering, computational engineering, fluid mechanics and thermal science, solid mechanics and materials, and system dynamics and control. Requirements include at least 3 upper-level courses (cluster courses) of which at least 2 must come from Group A (MECH 400, 403, 411, 417, 454, 474, 488, 498, 555, 594 and MSNE 402) and the third can come from Group A or Group B. Group B courses include any 300+ course offered within the School of Engineering.

## Sample Degree Plan

*THIS IS ONE EXAMPLE OF MANY POSSIBLE SCHEDULES.*

*CONSULT A DIVISIONAL OR DEPARTMENTAL ADVISER TO CUSTOMIZE YOUR DEGREE PLAN.*

FALL				SPRING			
<b>FRESHMAN</b>		17 credits		<b>FRESHMAN</b>		17 credits	
MATH 101	Single Variable Calculus I	3		MATH 102	Single Variable Calculus II	3	
PHYS 101*	Mechanics w/Lab	4*		PHYS 102**	Electricity & Magnetism II w/Lab	4*	
CHEM 121	General Chemistry I w/Lab	4*		CHEM 122	General Chemistry II w/Lab	4*	
FWIS	Freshman Writing	3		CAAM 210	Intro to Engineering Computation	3	
OPEN	Open elective	3		DIST	Distribution elective	3	
<b>SOPHOMORE</b>		16 credits		<b>SOPHOMORE</b>		16 credits	
MATH 211	Ordinary Differential Equations	3		MATH 212	Multivariable Calculus	3	
MECH 211	Engineering Mechanics	3		MECH 200	Classical Thermodynamics	3	
MSNE 301	Materials Science	3		MECH 311	Mechanics of Solids	3	
MECH 340	Industrial Processing Lab	1		MECH 331	Junior Laboratory I - Mechanics	1	
OPEN	Open elective	3		DIST	Distribution elective	3	
DIST	Distribution elective	3		OPEN	Open elective	3	
<b>JUNIOR</b>		17 credits		<b>JUNIOR</b>		16 credits	
CAAM 335	Matrix Analysis	3		CAAM 336	Diff Eqs in Science & Eng	3	
MECH 343	Modeling of Dynamic Systems	4*		MECH 332	Junior Laboratory II - Fluids/Solids	1	
MECH 371	Fluid Mechanics I	3		MECH 401	Machine Design	3	
SPEC	MECH Cluster #1	3		MECH 420	Fund of Control Systems	3	
DIST	Distribution elective	3		MECH 481	Heat Transfer	3	
LPAP	Lifetime Phys Activity elective	1		DIST	Distribution elective	3	
<b>SENIOR</b>		17 credits		<b>SENIOR</b>		17 credits	
MECH 407	Mechanical Design Project I	4		MECH 408	Mechanical Design Project II	3	
MECH 431	Senior Laboratory	1		MECH 412	Vibrations	3	
MECH 472	Thermal Systems Design	3		SPEC	MECH Cluster #3	3	
STAT 305	Intro to stat for biosciences	3		DIST	Distribution elective	3	
	or 310 or ECON 307			OPEN	Open elective	3	
SPEC	MECH Cluster #2	3		OPEN	Open elective	2	
DIST	Distribution elective	3					

\* In addition to class hours, these courses have a regularly scheduled lab and/or discussion session that must fit into your schedule.

- When registering for PHYS 101, you must also register for PHYS 103, the discussion section for 101.
- When registering for PHYS 102, you must also register for PHYS 104, the discussion section for 102.

BASIC REQUIREMENTS	General math & science courses	40
	Core courses in major	45
ELECTIVE REQUIREMENTS	Engineering specialization electives	9
	Open electives and LPAP	17
	FWIS and distribution courses	21
Minimum credit required for the B.S.		132

Of the 132 total degree credits, the B.S. in Mechanical Engineering requires at least 85 credits in general math and science courses and core courses.

## Major Requirements

NUMBER	CREDIT	TITLE
CAAM 210	3	Introduction to Engineering Computation
CAAM 335	3	Matrix Analysis
CAAM 336	3	Differential Equations in Science and Engineering
CHEM 121	4*	General Chemistry I w/Lab
CHEM 122	4*	General Chemistry II w/Lab
MATH 101	3	Single Variable Calculus I
MATH 102	3	Single Variable Calculus II
MATH 211	3	Ordinary Differential Equations and Linear Algebra
MATH 212	3	Multivariable Calculus
MSNE 301	3	Materials Science
PHYS 101•	4*	Mechanics w/Lab
PHYS 102••	4*	Electricity and Magnetism w/Lab
STAT 305/310/ECON 307	3	Limited Elective
MECH 200	3	Classical Thermodynamics
MECH 211	3	Engineering Mechanics
MECH 311	3	Mechanics of Solids & Structures
MECH 331	1	Junior Laboratory I (Mechanics Lab)
MECH 332	1	Junior Laboratory II (Thermo/Fluids Lab)
MECH 340	1	Industrial Processing Lab
MECH 343	4*	Modeling of Dynamic Systems
MECH 371	3	Fluid Mechanics I
MECH 401	3	Mechanical Design Applications
MECH 407	4	Mechanical Design Project I
MECH 408	3	Mechanical Design Project II
MECH 412	3	Vibrations
MECH 420	3	Fundamentals of Control Systems
MECH 431	1	Senior Laboratory
MECH 472	3	Thermal Systems Design
MECH 481	3	Heat Transfer
SPECIALIZATION CLUSTER	3	Mech Area Cluster Course #1
SPECIALIZATION CLUSTER	3	Mech Area Cluster Course #2
SPECIALIZATION CLUSTER	3	Mech Area Cluster Course #3

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- When registering for PHYS 102, you must also register for PHYS 104, the discussion section for 102.