

# MECH

Mechanical Engineering



<b>WEB LINKS</b>	<a href="http://mech.rice.edu/undergrad">mech.rice.edu/undergrad</a>
<b>FRANK ADVICE</b>	Students should register with Center for Career Development ( <a href="http://ccd.rice.edu/">http://ccd.rice.edu/</a> ) and create a résumé. The CCD maintains RICElink, where potential employers post open positions. If students are sure that they are going to major in mechanical engineering, then they are encouraged to declare their major early in the spring semester of freshman year and see a major advisor to discuss their 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 BSME degree. If students intend to double major, consultation with a major advisor is encouraged to develop a program of study.
<b>BS VERSUS BA</b>	Only the BS degree is accredited by the Engineering Accreditation Commission of ABET, <a href="http://www.abet.org">http://www.abet.org</a> , and is the most direct route toward becoming a licensed professional engineer (PE). The BA is recommended only for students who will pursue professional careers in medicine, law, or business immediately after their undergraduate education. These students will need to take additional prerequisite classes for these professional post-graduate programs.
<b>NOT REQUIRED BUT HIGHLY RECOMMENDED COURSES</b>	MECH 403, Computer Aided Design is not required, but is a highly recommended class. In particular, the knowledge gained from this class often helps students obtain summer internships after either sophomore or junior years.



<b>RESEARCH</b>	Undergraduate research is arranged by talking directly to professors. Students are encouraged to investigate the research profiles of faculty members at <a href="http://mech.rice.edu">http://mech.rice.edu</a> .
<b>INTERNSHIPS</b>	Most students participate in summer internships in industry, especially after sophomore and junior years. Summer research positions at Rice are often available as well.
<b>STUDY ABROAD</b>	Study abroad and co-ops are most feasible in the fall semesters of the sophomore and junior years. This avoids conflicts with Lab classes that are difficult to find elsewhere (MECH 331, 332) and also avoids conflicts with the year-long senior design sequence (MECH 407/408).
<b>PROFESSIONAL ORGANIZATIONS</b>	<p>The American Society of Mechanical Engineers (<a href="http://asme.rice.edu/">http://asme.rice.edu/</a>), which is free for the first year of membership, occasionally hosts industry representatives and organizes outreach, service and design projects.</p> <p>The American Institute of Aeronautics and Astronautics (<a href="http://www.ruf.rice.edu/~aiaa/">http://www.ruf.rice.edu/~aiaa/</a>) organizes presentations, study breaks, and other 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/">http://ewb.rice.edu/</a>). Leadership positions are often available to freshmen and sophomores of all of these organizations.</p>
<b>INTERESTING COURSES FOR NON-MAJORS</b>	<p>MECH 454 Computational Fluid Mechanics</p> <p>MECH 498 Introduction to Robotics</p> <p>MECH 594 Introduction to Aerodynamics</p>

# 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 MSCI 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 ADVISOR TO CUSTOMIZE YOUR DEGREE PLAN.*

FALL				SPRING			
FRESHMAN		17 credits		FRESHMAN		17 credits	
MATH 101	Single Variable Calculus I	3		MATH 102	Single Variable Calculus II	3	
PHYS 101	Mechanics w/Lab	3*		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	
LPAP	Lifetime Phys Activity elective	1					
SOPHOMORE		16 credits		SOPHOMORE		16 credits	
MATH 211	Ordinary Differential Equations	3		MATH 212	Multivariable Calculus	3	
MECH 211	Engineering Mechanics	3		MECH 200	Classical Thermodynamics	3	
MSCI 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	
JUNIOR		16-17 credits		JUNIOR		16-17 credits	
CAAM 335	Matrix Analysis	3-4		CAAM 336	Diff Eqs in Science & Eng	3-4	
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	
				DIST	Distribution elective	3	
SENIOR		17 credits		SENIOR		18 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	STAT 305 or 310 or 331	3		DIST	Distribution elective	3	
SPEC	MECH Cluster #2	3		OPEN	Open elective	3	
DIST	Distribution elective	3		OPEN	Open elective	3	

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

BASIC REQUIREMENTS	General Math & Science Courses	42
	Core Courses in Major	42
ELECTIVE REQUIREMENTS	Engineering Specialization Electives	9
	Open Electives and LPAP	15
	FWIS and Distribution Courses	24
Minimum credit required for the B.S.		132

Of the 132 total degree credits, the BS in Mechanical Engineering requires at least 84 credits in general math and science courses and core courses.

## Major Requirements

NUMBER	CREDIT	TITLE
CAAM 210	3	Introduction to Engineering Computation
CAAM 335	3–4	Matrix Analysis
CAAM 336	3–4	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	3*	Mechanics w/Lab
PHYS 102	4*	Electricity and Magnetism w/Lab
STAT 305/310/331	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

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