

# Department of Mechanical Engineering

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Mechanical Engineering is the application of science and mathematics to the design, development, and operation of mechanical and energy systems. Examples of these systems include mechanical devices ranging from simple linkages and gears to complex automated robots and energy systems ranging from basic water pumps to high-performance jet engines. Since the range of applications is so broad, virtually all industries employ Mechanical Engineers in various capacities. Some of the major areas of employment are the manufacturing, chemical, paper, aerospace, utility, construction, transportation, petroleum, electronics, and computer industries.

The mission of the Department of Mechanical Engineering is to educate students in fundamental engineering principles, thus enabling the understanding of existing and next generation technologies relevant to research and engineering practice. All graduates will receive a broad education that will enable them to be successful in industry or academia, the profession and the community.

To carry out this mission, the Mechanical Engineering faculty, with input from other constituencies, has established the following objectives that describe the expected accomplishments of graduates during the first few years following graduation:

- Apply fundamental engineering knowledge, industry perspective and research skills to become experts or leaders within a chosen engineering career path.
- Exhibit life-long learning and develop personal and teamwork skills in order to effectively solve real-life problems and clearly communicate their results.
- Practice ethical responsibility and accountability in professional activities and actively participate in professional development.

The Mechanical Engineering curriculum is designed to meet these objectives. The basic courses in mechanics, materials, thermodynamics, electrical engineering systems, and dynamics prepare the student for the comprehensive design courses in the senior year culminating in major design experiences in energy systems and in mechanical systems. Throughout the curriculum there is significant use of the computer to solve realistic engineering problems. All entering ME juniors are required to have a portable computer that they will use interactively in the classroom. The ME laboratory sequence stresses the planning, design, and operation of experiments. The curriculum also places a strong emphasis on technical communications. Senior technical electives allow the student to study particular areas of interest.

The B. S. program in Mechanical Engineering is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the commission's General Criteria and Program Criteria for Mechanical and similarly named engineering programs.

## General Education Requirements

### English Composition

EN 1103	English Composition I	3
or EN 1104	Expanded English Composition I	
EN 1113	English Composition II <sup>1</sup>	3
or EN 1173	Accelerated Composition II	

### Mathematics

See Major Core

### Science

See Major Core

### Humanities

See General Education courses 6

### Fine Arts

See General Education courses 3

### Social/Behavioral Sciences

See General Education courses 6

### Major Core

#### Math and Basic Science

MA 1713	Calculus I <sup>1</sup>	3
MA 1723	Calculus II <sup>1</sup>	3
MA 2733	Calculus III <sup>1</sup>	3

MA 2743	Calculus IV <sup>1</sup>	3
MA 3113	Introduction to Linear Algebra <sup>1</sup>	3
MA 3253	Differential Equations I <sup>1</sup>	3
CH 1213	Chemistry I <sup>1</sup>	3
CH 1211	Investigations in Chemistry I <sup>1</sup>	1
CH 1223	Chemistry II <sup>1</sup>	3
PH 2213	Physics I <sup>1</sup>	3
PH 2223	Physics II <sup>1</sup>	3
<b>Engineering Topics</b>		
IE 3913	Engineering Economy I	3
EM 2413	Engineering Mechanics I <sup>1</sup>	3
EM 2433	Engineering Mechanics II <sup>1</sup>	3
EM 3313	Fluid Mechanics <sup>1</sup>	3
EM 3213	Mechanics of Materials <sup>1</sup>	3
ECE 3413	Introduction to Electronic Circuits <sup>1</sup>	3
ME 1111	Introduction to Mechanical Engineering <sup>1</sup>	1
ME 2133	Modeling and Manufacturing <sup>1</sup>	3
ME 3103	Experimental Measurements and Techniques	3
ME 3113	Engineering Analysis <sup>1</sup>	3
ME 3313	Heat Transfer	3
ME 3403	Materials for Mechanical Engineering Design	3
ME 3423	Mechanics of Machinery	3
ME 3513	Thermodynamics I <sup>1</sup>	3
ME 3523	Thermodynamics II	3
ME 3613	System Dynamics	3
ME 4111	Professional Development Seminar	1
ME 4301	Thermo-Fluids Laboratory	1
ME 4333	Energy Systems Design	3
ME 4401	Solid Mechanics Laboratory	1
ME 4403	Machine Design	3
ME 4433	Capstone Design and Innovation	3
ME 4643	Introduction to Vibrations and Controls	3
Technical Elective <sup>2</sup>		9
<b>Oral Communication Requirement</b>		
Satisfied by successful completion of ME 2133, ME 4433, and GE 3513		
<b>Writing Requirement</b>		
GE 3513	Technical Writing	3
<b>Computer Literacy</b>		
CSE 1233	Computer Programming with C (or equivalent programming course) <sup>1</sup>	3
<b>Total Hours</b>		<b>128</b>

<sup>1</sup> A grade of C or better must be made in these courses.

<sup>2</sup> A list of Mechanical Engineering technical electives is maintained by the Mechanical Engineering Department. Substitutions may be approved by writing the ME Dept.