

Mechanical Engineering



Department of Mechanical Engineering
College of Engineering and Computer Science

The Program

The Department of Mechanical Engineering (ME) provides an educational curriculum whose graduates will be technically skilled and socially responsible mechanical engineers. Necessary to this objective is that graduates possess strong skills in analysis, computation, and experimentation in mechanical engineering systems design and applications. Complementary to these skills are respect for engineering ethical behavior and an understanding of the natural interaction of the profession with society. ME graduates must also be adept communicators and be able to work in a team setting. Students complete a **minimum of 128 credits**, receive a **Bachelor of Science in Engineering (BSE) degree in Mechanical Engineering** and are prepared for immediate professional employment or graduate study.

Mechanical engineers work with complex mechanical devices and systems needed for the generation, transmission, and use of power to create a safer, more efficient, and cleaner society. Mechanical engineering specialties include automobiles and automobile engines; aircraft and ship engines; robotics; energy conversion systems; fuel and combustion technology; materials science; heating and air conditioning; home appliances; instrumentation; medical, hospital, and manufacturing equipment; and machinery for such industries as aerospace, automotive, rubber, plastics, textiles, petroleum, and construction.

Mechanical engineers pursue careers in research, design, development, testing, manufacturing, operations and maintenance, and technical marketing and sales.

Curriculum Requirements

Area	Semester Credits
Area I CECS Distribution Requirements	24
COMP 105 English Composition I	3
COMP 270 Technical Writing	3
ECON 201 Macroeconomics	3
– Two courses in the humanities, from the specified choices	6
– Two courses in the behavioral/social sciences, from the specified choices	6
– Restricted elective: one course in the humanities, the behavioral/social sciences, or a 400-level ME course	3
Area II Basic Preparation Requirements	49
ENGR 100 Introduction to Engineering	2
ENGR 126 Engineering Computer Graphics	2
Mathematics	
MATH 115 Calculus I	4
MATH 116 Calculus II	4
MATH 205 Calculus III for Engineers	3
MATH 216 Differential Equations	3
MATH 217 Matrix Algebra	2
Chemistry	
CHEM 144 General Chemistry I	4
CHEM 146 General Chemistry II	4
Physics	
PHYS 150 General Physics I	4
PHYS 151 General Physics II	4
Core Engineering Courses	
ENGR 216 Computer Methods	2
ENGR 250 Principles of Engineering Materials	3
ME 230 Thermodynamics	4
ME 260 Design Stress Analysis	4
Area III Professional Requirements	55
ME 325 Thermal Fluid Sciences I	4
ME 345 Engineering Dynamics	4
ME 349 Instrumentation & Measurement Systems	3
ME 360I Design & Analysis of Machine Elements	4
ME 364 Probability, Statistics, and Reliability in Machine Design	3
ME 375 Thermal Fluid Sciences II	4
ME 379 Thermal-Fluid Laboratory	3
ME 381 Manufacturing Processes I	4
ECE 305 Introduction to Electrical Engineering	4
ME 442 Control Systems Analysis & Design	4
ME 467I Senior Design I	4
ME Design Electives	4
ME Upper-Level Electives	6
General Electives	4

NOTE: Curriculum requirements may change. Students should see an advisor for current requirements.

Facilities of the College of Engineering and Computer Science

Modern computer and laboratory facilities are essential in preparing students for professional positions in the world of engineering and computer science practice and research. As part of their required undergraduate courses, College of Engineering and Computer Science students can make use of numerous computer and engineering laboratories to test and apply the theories learned from faculty.

CECS students use the local area network of PCs and Unix computers as well as the large Sun workstation network and the computer-aided design laboratories.

The ME Department's own laboratories are also used by students in their undergraduate courses. These include the thermal/fluids, acoustics and vibration, additive manufacturing processes, applied mechanics, automotive, climate control education and research, combustion, composites, fuels and engine, instrumentation and measurement, materials testing, metallography, numerical fluid and thermal science, crash, vibration and impact, and nanotechnology laboratories, as well as the anechoic chamber.

Faculty of the Mechanical Engineering Department

The program is taught primarily by Ph.D. faculty dedicated to teaching, advising, and research. Some courses are taught by local industry professionals. The research interests of the mechanical engineering faculty include composite materials, internal combustion engines, computational fluid mechanics, heat transfer, vibration, acoustics, and structural analysis.

Cooperative Education

Engineering students are eligible to participate in the College of Engineering and Computer Science's Cooperative Education Program. During co-op placements engineering juniors or seniors alternate semesters of full-time classes with semesters of full-time paid engineering work in a company or organization in their field.

Co-op makes it possible for students to have the experience of working in the engineering field before they graduate.

Students who participate in co-op gain valuable professional engineering experience, earn a salary, and establish contacts useful for later employment.

Co-op students in mechanical engineering have found recent co-op placements in such companies as: Alcoa Fujikura Ltd. (AFL), American Axle & Manufacturing, Arvin-Meritor, Associated Springs, Behr, BodyCote USA, Cadillac Products, Calsonic North America, Comau-Pico, Consumers Energy, Defiance, Detroit Diesel, DTE Energy, Denso International, DiClemente-Siegel, EKK Inc., Faurecia, Federal-Mogul, Fives Group-Cinetic, General Electric, Ilijin USA, Intier Automotive, Lear, L&W Engineering, Martinrea International, Maxitrol, Meridian Automotive, Mill Steel, Montplast of N.A., Nissan Technical Center, Peter-Basso & Associates, Porsche Engineering Services, Pratt-Whitney, Ricardo Inc., Siemens Automotive, SKF, Inc., Sumitomo, Tenneco, TK Holdings, Toyota Technical Center, TRW, Unisys, United States Army Tank Command, U.S. Steel, Usui, Visteon, and Yazaki North America.

Employment Opportunities

The starting salaries recently reported by new graduates with a BSE in Mechanical Engineering average in the \$55,000 to \$65,000 range nationally.

Mechanical engineers who recently graduated from the University of Michigan-Dearborn have found professional employment in such companies as Bosch, Chrysler, Denso International, General Electric, General Motors, Ford, Kelsey-Hayes, Rockwell, Terumo Cardiovascular Systems, Toyota Technical Center, U.S. Army Tank Command, and U.S. Steel.

Admission Requirements

From High School:

3.00 adjusted GPA or higher and ACT of 22 or higher.

From Community College or University:

2.75 adjusted GPA (cumulative, mathematics, and science—all three) in transferable courses. Courses with a grade of C- or below do not transfer.

For More Information

For Engineering and Computer Science Information:

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Student Records and Advising
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For Admissions Information and Applications:

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