**Career Field in Focus: MECHANICAL ENGINEERING**

**Engineering Advising Center**
University of Michigan College of Engineering

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### What is Mechanical Engineering?

Mechanical engineers research, develop, design, manufacture, and test tools, engines, machines, and other mechanical devices. They work on power-producing machines such as electric generators, internal combustion engines, and steam and gas turbines, as well as power-using machines such as refrigeration and air-conditioning equipment, machine tools, material handling systems, elevators and escalators, industrial production equipment, and robots used in manufacturing. Mechanical engineers also design tools that other engineers need for their work. Mechanical engineering is one of the broadest engineering disciplines. Mechanical engineers may work in production operations in manufacturing or agriculture, maintenance, or technical sales. Many are administrators or managers.

<table>
<thead>
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<th>Top Mechanical Engineering Skills:</th>
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<tr>
<td>- Mathematical skills</td>
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<td>- Problem solving</td>
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<td>- Critical thinking</td>
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<td>- Scientific reasoning</td>
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<td>- Reading comprehension</td>
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<td>- Communication Skills</td>
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### Typical Job Titles in Mechanical Engineering:

- Design Engineer
- Automotive Engineer
- Machine Tool Designer
- Combustion Engineer
- Solar Engineer
- Stress Analyst
- Hydraulic Engineer
- Test Inspection Engineer
- Automation Engineer
- Ventilation Engineer
- Engine Designer
- Plant Equipment Engineer
- Failure Analysis Engineer
- Research Engineer

### Average Salary:

For employees with a bachelor's degree in Mechanical Engineering, the nationwide average salary is $80,580.*

2012-2013 UM BSE graduates received average starting salaries of $63,997.**

**Engineering Career Resource Center

### Industries You’ll Find Mechanical Engineers:

- Industrial machinery manufacturing
- Architectural/design services
- Aerospace industry
- Automobile industry
- Public administration/government/patent law
- Agricultural, mining, & construction industry
- Scientific research
- Business management
- Medical/Biomechanics
- Robotics

### Job Outlook for Mechanical Engineers:

Mechanical engineers are projected to have 9% employment growth over the next decade, slower than average for all occupations. This is because total employment in manufacturing - in which employment of mechanical engineers is concentrated - is expected to decline. Some new job opportunities will be created due to emerging technologies in biotechnology, materials science, and nanotechnology. For this reason, those who keep abreast of more recent advances in technology may enjoy more employment opportunities. Other opportunities outside of mechanical engineering will always exist because mechanical engineering skills can be applied in other engineering specialties.

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Information from: http://www.bls.gov/ooh/ and www.myplan.com

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EAC 2014-2015
Getting Started with Mechanical Engineering

Which ME classes should you take to start?

To begin the ME major, a good option is to take ME 240 and/or ME 211, followed by ME 235, and ME 250. ME 211 and 240 serve as excellent introductions to the major. Also remember that ME has an Advanced Math requirement as well as one Electrical Circuits course (EECS 314 or EECS 215), and a required Economics course, which will count toward your Intellectual Breadth Common Requirement for Engineering. Read more about the ME Department as well as the BSE degree via the Undergraduate Handbook (me.engin.umich.edu/academics/ugsh)

Course Descriptions

ME 211. Introduction to Solid Mechanics
Prerequisite: Physics 140, Math 116. (4 credits)

ME 235. Thermodynamics
Prerequisite: Chem 130, 125 or Chem 210, 211, and Math 116. (3 credits)
Introduction to engineering thermodynamics. First law, second law system and control volume analyses; properties and behavior of pure substances; application to thermodynamic systems operating in a steady state and transient processes. Heat transfer mechanisms. Typical power producing cycles and refrigerators. Ideal gas mixtures and moist air applications.

ME 240. Introduction to Dynamics and Vibrations
Prerequisite: Physics 140, preceded or accompanied by Math 216. (4 credits)

ME 250. Design and Manufacturing I
Prerequisite: Math 116, Eng 101 or equivalent. (4 credits)