MECHANICAL ENGINEERING
COURSE 2

DESCRIPTION
Mechanical engineers design and manufacture everything from small individual parts and devices (e.g., microscale sensors and inkjet printer nozzles) to large systems (e.g., spacecraft and machine tools). The role of a mechanical engineer is to take a product from an idea to the marketplace. Mechanical engineers work to understand the appearance, functionality, manufacturability, and potential use situations for a designed product. The foundation of mechanical engineering is formed by mechanics, energy and heat, mathematics, engineering sciences, design, and manufacturing. Mechanical engineers may utilize computer-aided design (CAD) to digitally design parts or systems, as well as perform calculations and simulations.

SKILLS
Familiarity with engineering fundamentals
Strong communication and problem-solving abilities
Computer Aided Design (CAD) software
Project management
Testing, evaluating, and modifying products

POSSIBLE FUTURE POSITIONS
■ **Design engineer**: Develop mechanical automation designs from customer specifications. Conduct design reviews with customers. Utilize analytical tools to assist in the design process, and interface with suppliers.
■ **Manufacturing engineer**: Plan the tooling, construction, and assembly of the product as dictated by design specifications.
■ **Quality engineer**: Support development and ensure compliance with company quality management systems in accordance with industry standards, and provide technical support to product engineering, marketing, manufacturing, etc.

CAREER INDUSTRY EXAMPLES
Aerospace  Consumer manufacturing  Research and development
Automotive  Energy and utilities  Biomedical
Computer software  Health and medicine  Pumps and fluid systems
Consulting  Industrial engineering  Environmental

SAMPLE EMPLOYERS
Amazon.com  Brooks Automation  SharkNinja
Aurora Flight Sciences  Jet Propulsion Laboratory  Creare, Inc.
Boeing  Northrop Grumman  Tesla
INSIDE COURSE 2

2  Mechanical Engineering  Department size: 224
2-A Engineering as recommended by the Department of Mechanical Engineering  Department size: 232
2-OE Mechanical and Ocean Engineering  Department size: 6

DEPARTMENT FAVORITES

2.00B Toy Product Design
Toy Product Design is an introduction to the product design process with a focus on designing for play and entertainment. It is a project-centric class. Students work in small teams of 5–6 members to design and prototype new toys.

2.007 Design and Manufacturing I
Develops students’ competence and self-confidence as design engineers. It emphasizes the creative design process and the application of physical laws. As is the tradition, the class will end in a final robot competition, in which students compete against each other to see whose robot can win the most total points.

2.009 The Product Engineering Process
Students work in large teams of approximately 18-20 individuals to design and build working alpha prototypes of new products. Students learn about creativity, product design, working within a budget, and gain unifying engineering experience. The course is designed to emulate what engineers might experience as part of a design team in a modern product development firm.

MECHANICAL ENGINEERING-FRIENDLY LABS
BioInstrumentation Laboratory
Global Engineering and Research (GEAR) Lab
Laboratory for Manufacturing and Productivity
MIT Pappalardo Labs
Rohsenow Heat and Mass Transfer Laboratory
Toy Product Design Lab

GET INVOLVED WITH MECHANICAL ENGINEERING
Assistive Technology Club  Engineering without Borders  Rocket Team
Design for America  MESS  UAV Team
Design / Build / Fly  Robotics Team

Sources: MIT Global Education & Career Development, Graduating Student Survey, Collegeboard.org, University of Minnesota Center for Academic Planning.
UPOP is here to help you! Come talk to us in 1-123 or email us at upopstudentprogram@mit.edu