

MECHANICAL ENGINEERING

Course 2

Department Contact

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Description

Mechanical Engineering students at MIT learn by doing, experiencing a level of understanding that only occurs through creation. Mechanical Engineering is a versatile and interdisciplinary field that includes everything from nano engineering at the smallest scales – down to one-thousandth the size of a human hair – to the biggest systems, such as those for large-scale manufacturing or water desalination. We bring our signature passion, creativity, and rigor to bear on the world’s greatest challenges. Within the Department of Mechanical Engineering at MIT, we currently have three programs of study:

1. Course 2 is a traditional program which prepares students for a broad range of career choices in the field of mechanical engineering.
2. Course 2-OE, a structured program for students who wish to combine a firm foundation in mechanical engineering with a specialization in ocean engineering.
3. Course 2-A, a customizable bachelor’s degree which allows students to combine the essential elements of the traditional mechanical engineering program with their personal interests by choosing to study in an additional complementary field, such as robotics, bio, or energy. Students majoring in mechanical engineering find work across the board in many different fields from software to space exploration to product design—the possibilities are endless!

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2	Mechanical Engineering
2-A	Engineering as recommended by the Department of Mechanical Engineering
2-OE	Mechanical and Ocean Engineering

Introductory Classes

- 2.00A **Fundamentals of Engineering Design: Explore Space, Sea and Earth**
Student teams formulate and complete space/earth/ocean exploration-based design projects with weekly milestones. Introduces core engineering themes, principles, and modes of thinking. Specialized learning modules enable teams to focus on the knowledge required to complete their projects, such as machine elements, electronics, design process, visualization and communication. Includes exercises in written and oral communication and team building. Examples of projects include surveying a lake

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for millfoil, from a remote controlled aircraft, and then sending out robotic harvesters to clear the invasive growth; and exploration to search for the evidence of life on a moon of Jupiter, with scientists participating through teleoperation and supervisory control of robots.

2.00B **** Not offered Spring 2024**

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.

2.00C **Design for Complex Environmental Issues: Building Solutions and Communicating Ideas**

Students work in small groups, under the guidance of researchers from MIT, to pursue specific aspects of the year's Terrascope problem. Teams design and build prototypes, graphic displays and other tools to communicate their findings and display them in a Bazaar of Ideas open to the MIT community. Some teams develop particular solutions, others work to provide deeper understanding of the issues, and others focus on ways to communicate these ideas with the general public. Students' work is evaluated by independent experts. Offers students an opportunity to develop ideas from the fall semester and to work in labs across MIT. Limited to first-year students.

Course 2-Friendly UROP Areas

- BioInstrumentation Laboratory
- Biomimetic Robotics Lab
- Device Realization Lab
- Device Research Laboratory
- Energy and Microsystems Innovation Global Engineering and Research (GEAR)
- Laboratory for Biomechanics and Human Rehabilitation
- Laboratory for Biologically Inspired Photonic Engineering
- Laboratory for Manufacturing and Productivity (LMP)
- Mechatronics Research Lab
- MIT Ideation Laboratory
- MIT Lincoln Labs
- MIT Mechanosynthesis Group
- MIT Pappalardo Labs
- MIT Precision Engineering Research Group
- Nanoelectronics Lab
- Research Lab for Electronics (RLE)
- Rohsenow Kendall Heat Transfer Laboratory

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- Sea Grant (SEAG)
- Therapeutic Technology Design & Development Lab
- Toy Product Design Lab

Get Involved with Course 2

- Mechanical Engineering Student Society (MESS)
- Engineering without Borders
- Rocket Team
- Design for America
- Assistive Technology Club
- UAV Team
- Design / Build / Fly
- Robotics Team

Skills

- Read and interpret blueprints, technical drawings, and schematics
- Research, design, evaluate, install, operate, or maintain mechanical products
- Knowledge of Computer Aided Design (CAD) software
- Project management skills

Possible Future Jobs

- **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

Nuclear engineer

Automotive

Energy and utilities

Pumps and fluid systems

Biomedical

Environmental engineer

Research and development

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Computer software

Health and medicine

Consulting

Industrial engineering

Sample Employers

Amazon

Creare, Inc.

SharkNinja

Apple

Ford Motor Company

SpaceX

Aurora Flight Sciences

Jet Propulsion Laboratory

Tesla

Boeing

Nest

Brooks Automation

Northrop Grumman