From designing computers and bridges to developing medical equipment and controlling pollution, engineers improve every aspect of human life.

As an engineer, your career opportunities are virtually unlimited. Hundreds of employers, from state agencies to international corporations, recruit graduates from all engineering programs at Michigan Tech. Engineers consistently earn the highest starting salaries of any four-year degree graduates.

At Michigan Tech, you learn by doing. The principles learned in lecture halls are put to work in our multimillion-dollar laboratories and computer centers. Hundreds of workstations are equipped for computer-aided engineering applications, and the computer graphics-design laboratories keep engineering education up to date.

Degree programs in engineering

As one of the largest engineering schools in the nation, we offer bachelor’s degrees in nine engineering disciplines, and two related sciences. We also offer two degrees under the Bachelor of Science in Engineering—biomedical engineering and manufacturing engineering.

- Applied Geophysics
- Biomedical Engineering
- Chemical Engineering
- Civil Engineering
- Computer Engineering
- Electrical Engineering
- Environmental Engineering
- Geological Engineering
- Geology
- Manufacturing Engineering
- Mechanical Engineering
- Metallurgical and Materials Engineering
- Mining Engineering

Biomedical Engineering—BSE

Biomedical engineers apply engineering principles to living systems. Their work can range from designing better wheelchairs to creating gene therapies. Biomedical engineers touch our lives every day—through their efforts, we are safer in our homes, cars, and workplaces.

Biomedical engineers develop ways to replace damaged or diseased organs (such as heart valves, artificial hearts, and kidney dialysis). They have perfected methods to preserve and prepare tissues for transplantation and have provided innumerable inventions to make our lives healthier and safer.

Fields employing bioengineers include chemical manufacturing, agriculture, medical engineering, and human engineering (the interfacing of machines and humans).

Chemical Engineering—BS, MS, PhD

Chemical engineering combines chemistry and engineering to produce chemicals and discover new ways to use them. Plastics, artificial fibers, paints, fertilizers, pesticides, and household cleaning products are just a few items created by chemical engineers. They also take on environmental challenges, such as desalination of seawater and refining petroleum more efficiently. In medicine, chemical engineers develop ways to mass produce life-saving drugs and vaccines.
Can't decide? Try General Engineering.

If you don’t know what field of engineering you want to specialize in, you can enroll in the first-year general engineering program, giving you time and experience to help you choose a major.

Chemical engineering courses at Michigan Tech include lab work in modern, fully equipped process control, polymer, and unit operations laboratories. Our Process Simulation and Control Center, the only one of its kind at a university, includes pilot-plant-scale equipment to perform sixteen individual chemical operations. Our distributed control system, mainframe computer, and workstations let you implement sophisticated control schemes, perform on-line analysis, and simulate chemical processes.

MTU’s chemical engineering graduates have been recruited by many employers, including 3M, Archer Daniels Midland, BASF, Dow Chemical, Dow Corning, IBM, and International Paper.

Civil Engineering—BS, MS, PhD

Civil engineers are concerned with structures—bridges, dams, highways, transit systems, airports, power plants, pipelines, space satellites and launching facilities, commercial/industrial buildings . . . If it’s really big and you build it, chances are it was designed by a civil engineer.

During your junior year, you can choose from one or more of the following options:

➤ Construction Engineering
➤ Structural Engineering
➤ Environmental Engineering
➤ Transportation Engineering
➤ Geotechnical Engineering
➤ Water Resources Engineering

Civil engineers are employed throughout industry and government. A civil engineering degree is often the basis for a career as a city planner, traffic engineer, or building contractor. A few employers of MTU’s civil engineering graduates are Caterpillar, Payne & Dollan, Trane, 3M, Conoco, Johnson Controls, Schlumberger, Black and Veatch, and Dow Corning.

Computer Engineering—BS

The field of computer engineering is concerned with the design, construction, application, and operation of computer systems. Our curriculum provides a solid foundation in all of these areas, with a particular emphasis on the application of digital computers, circuits, and systems to the solution of real-world problems requiring knowledge of fundamental principles of electrical engineering. Specifically, the program’s primary focus is in the areas of embedded systems, digital signal processing, and programmable digital systems.

Employers looking for computer engineers include Honeywell, Rockwell, Rosemount, Inc., Stryker, IBM, Mead Paper, and Unisys.

Electrical Engineering—BS, MS, PhD

Electrical engineers improve traditional uses of electricity and explore the role of electricity in new technologies. They spearhead new developments in electronics, such as designing the circuitry for a pacemaker or personal computer, controlling computers for assembly lines, and developing sophisticated telecommunications equipment.

Our electrical engineering curriculum offers courses in areas such as

➤ automatic control
➤ communications
➤ computer engineering
➤ electronics
➤ engineering electromagnetics
➤ power and machinery

Our electrical engineering program provides hands-on education in more than twenty labs that have sophisticated devices such as lasers, microprobes, robots, oscilloscopes, spectrum analyzers, signal generators, network analyzers, and anechoic chambers.

Electrical engineers are needed in virtually every industry, including computing, communications, manufacturing, medical services, and aerospace. They are involved with technology ranging from huge electrical transformers to microchips no larger than the head of a pin.

Our graduates are employed by General Motors, IBM, General Electric, Honeywell, Consumers Power, Westinghouse, Unisys, Motorola, Texas Instruments, US Steel, and Wisconsin Electric, among many others.
Environmental Engineering—BS, MS, PhD

Environmental engineers help protect and restore the environment. They evaluate pollution problems; design, construct, and operate pollution control facilities; and implement and enforce environmental protection legislation. As an environmental engineer, you will deal with drinking water quality, wastewater treatment, air pollution, noise control, and waste disposal. As public concern about the environment grows, so do job opportunities for environmental engineers.

Michigan Tech grads are employed by 3M, Cummins Engine, General Motors, Kimberly-Clark, Marathon Ashland Petroleum, Semco Energy, and Wade-Trim Group.

Geological Engineering and Sciences—Applied Geophysics—BS, MS; Geological Engineering—BS, MS, PhD; Geology—BS, MS, PhD

Geological engineers apply engineering to challenges such as locating new sites and designing facilities for nuclear waste disposal; developing and restoring groundwater resources; stabilizing rock and soil slopes for dams, highways, and property development; minimizing the danger from landslides, earthquakes, and volcanoes; and exploring and developing resources.

Geologists specialize in exploring and extracting minerals, searching for energy resources, disposing of nuclear and chemical waste, choosing the best sites for structures, and studying volcanoes and earthquakes. Developments in the space program also offer opportunities.

Applied geophysicists perform many of the same duties as geologists but are more involved in gathering subsurface data for laboratory interpretation.

Employment opportunities are excellent. Among the companies that hire our graduates are Ciroba Group, Newfield Exploration, Radian International, Nicor Gas, Lafarge, and Professional Service Industries.

Manufacturing Engineering—BSE

Manufacturing engineering develops a systems approach to problem solving, providing students with an understanding of all the internal and external forces that can affect a manufacturing process/system.

Designed around a core engineering base with components in human relations, statistics, industrial engineering, total quality concepts and business, the student has the opportunity to achieve specialized education in manufacturing, industrial, design, or business area built on a solid engineering science foundation.

Mechanical Engineering—Engineering Mechanics—BS, MS, PhD

Mechanical engineers are needed to design and produce anything mechanical—automobiles, airplanes, space vehicles, power plants, computers, robots, furnaces, household appliances, medical equipment—to name just a few.

Our mechanical engineering curriculum will introduce you to the latest technologies, such as robotics and computer-aided design/computer-aided manufacturing. A reas of specialization are:

- design
- energy systems
- manufacturing/industrial engineering
- dynamic systems
- biomedical engineering
- solid mechanics

Students here have access to one of the most sophisticated and complete computer graphics and design facilities in the nation, as well as a lab dedicated to robotics and automated systems.

Career opportunities are great; virtually every industry depends upon mechanical engineers. Among the employers of our mechanical engineering graduates are BA SF, Caterpillar, Deere & Company, Detroit Diesel, DaimlerChrysler, Ford, GM, General Dynamics, General Electric, LTV Steel, Mercury Marine, Nestle USA, Northern States Power, and Wisconsin Electric.

Mineral Museum

Michigan Tech’s Seaman Mineral Musement contains more than 65,000 specimens and has one of the nation’s premier collections of crystals, minerals, and ores from around the world, including the world’s finest display of specimens from Michigan’s copper- and iron-mining past.

Master of Engineering

The Master of Engineering degree is a terminal professional degree for those students wishing to take a year of advanced course work beyond the bachelor’s degree. Master of engineering students cap off the degree with work on a design project or internship.
Accreditation
All of MTU’s undergraduate programs in engineering are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

Metallurgical and Materials Engineering—BS, MS, PhD
Metallurgical engineers are concerned with synthetic materials. Their knowledge of metals, alloys, ceramics, plastics, semiconductors, and composites leads to improved materials for new consumer and industrial products.

Our metallurgical and materials engineering undergraduate program is among the largest in the nation. You’ll gain hands-on experience in modern labs, and you can specialize in your area of interest, choosing from the following options:

➤ Materials Science and Engineering
➤ Mineral Process Engineering

Because the properties of materials are critical to all engineering applications, career opportunities are vast. Stronger construction materials; lightweight, high-strength materials used in aerospace; electronic materials for computers; and special materials for medical devices such as pacemakers and artificial joints all stem from the work of metallurgical and materials engineers.

Metallurgical engineers have an excellent job placement rate and above-average starting salaries. MTU metallurgical engineering graduates are employed by companies such as ALCOA, Delphi Automotive, Hitachi Magnetics, Howmet, Johnson Controls, Ford, GM, Toyota Technical Center, Siemens, and Conoco.

Mining Engineering—BS, MS, PhD
Mining engineers extract minerals from the earth efficiently and safely while protecting the environment. Their work involves:

➤ prospecting for mineral deposits
➤ processing and marketing minerals
➤ planning and operating mines
➤ restoring the land

The greatest challenge for today’s mining engineer is to meet the increasing demand for minerals while existing mineral deposits are being depleted.

Students may visit our experimental underground mine, located about two miles from campus. But the mining engineering curriculum goes far beyond mining. Our graduates learn the fundamentals of geology and civil, mechanical, and electrical engineering and apply them throughout their careers in the mining industry. Graduates of MTU’s mining engineering program are employed by companies such as Cargill, Kiewit Engineering, Larfarge, and Svedala Industries.

At Michigan Tech, you can earn an interdisciplinary Certificate in Mine Environmental Engineering, preparing you to solve environmental problems associated with mining. Industries worldwide face increased governmental regulation and concern regarding environmental protection, and students with the certificate enjoy an advantage in the job market.

For more information on the programs offered by MTU’s College of Engineering, contact

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