Michigan Tech’s
COLLEGE OF SCIENCES AND ARTS

Michigan Tech provides an understanding of technology that will enrich your life and help you maximize your potential. We are known for our rigorous, hands-on approach to education, and the scientific and creative principles learned in the classroom are put to work in MTU’s multimillion-dollar laboratories, media centers, and computer centers.

Career opportunities are many and varied because numerous employers value the analytical and computer skills of science graduates. Your degree from the College of Sciences and Arts may lead to a career in areas as diverse as finance, teaching, film, writing, medicine, and law.

Degree programs

The College of Sciences and Arts offers programs in the following areas:

- Applied Physics
- Biological Sciences
- Chemistry
- Clinical Laboratory Science
- Computer Science
- Humanities
- Liberal Arts
- Mathematical Sciences
- Physics
- Scientific and Technical Communication
- Social Sciences

ROTC programs
- Air Force ROTC
- Army ROTC

Secondary teacher certification
- Biology
- Chemistry
- Clinical Lab Science
- Computer Science
- Earth Science
- English
- Mathematics
- Physical Science
- Physics
- Social Sciences

Pre-Professional programs
- Pre-Dentistry
- Pre-Medicine
- Pre-Optometry
- Pre-Pharmacy
- Pre-Physical Therapy
- Pre-Podiatry
- Pre-Veterinary Medicine

Biological Sciences—BS, MS, PhD

All living things and their environmental interactions are of concern to biologists. Microbiologists work with the smallest organisms—viruses, bacteria, fungi, protozoa, and algae—in areas such as disease control, food processing, and wastewater treatment. Geneticists are concerned with the mechanisms of inheritance relating to genetic disorders, natural selection, etc. Ecologists and environmental biologists study the relationship between organisms and their environment.

The biological sciences program offers many options:
- Molecular Biology (Biochemistry)
- Ecology
- General Biology
- Microbiology
- Plant Sciences
- Pre-Health Professions

You can find rewarding careers in biochemistry, biophysics, biomathematics, and biomedical engineering. You can also continue your education in graduate or medical school. Our graduates are employed by companies and organizations such as Kimberly-Clark, Stryker, American Hospital Supply, Baxter-Travenol, and the CIA.
Chemistry—BS, MS, PhD
Chemistry is the study of the properties and reactions of substances. As a chemist, you might develop new substances and improve existing chemicals; your research could lead to breakthroughs in consumer products and industrial processes such as lifesaving pharmaceuticals, stronger fibers and plastics, and pollution-detection methods. Chemists, with their unique understanding of materials, are on the forefront of the challenge to preserve the environment.

The chemistry program offers these options:
- Biochemistry
- Chemical Physics
- Polymers
- Environmental

Some major employers of MTU chemistry graduates are Conoco, Dow Chemical, Dow Corning, Chevron, Amoco, Schlumberger, and Naval Surface Warfare Center.

Clinical Laboratory Science—BS
Clinical laboratory scientists deal with medical tests for disease. Because they are in short supply, job prospects are excellent. Employers include hospitals, clinics, and physicians. In addition, clinical laboratory scientists work for pharmaceutical companies, chemical companies, and industrial research organizations, not only as laboratory technicians but also in sales, management, and education.

Among the employers of our graduates are Marshfield Clinic, Beaumont Hospital, Parke-Davis, Munson Medical Center, Henry Ford Hospital, Marquette General Hospital, Abbott Laboratories, and Upjohn.

Computer Science—BS, MS
Computer science covers software engineering, programming languages, systems programming, numerical and scientific computing, algorithms, computation theory, computer architecture, database systems, graphics, artificial intelligence, and parallel computing. The computer is an important tool in modern life, and the continuing growth in the use of computers and computer applications has resulted in a tremendous demand for well-trained computer scientists in virtually every field.

Computer science graduates obtain positions as computer programmers, systems analysts, systems programmers, and software designers.

The computer science program has three options:
- Computer Science—covers a broad spectrum of computer science; especially suitable for those interested in graduate studies
- Information Systems—oriented toward business applications in directing and operating activities of government, business, and industry
- Applications—applies computer science in other fields, such as engineering, physics, or forestry

Our computing equipment includes two Sun Sparc 20 compute-and-file servers, and thirty-eight color Sun workstations in four laboratories. And, yes, of course we’re on the Web.

Michigan Tech computer science graduates find employment with a variety of employers, including AT&T, Creative Solutions, Dow Chemical, Ford, IBM, Johnson Controls, Kraft Foods, Motorola, Microsoft, Stryker, and Whirlpool.

Humanities—AH; Liberal Arts—BA
Humanities students at Michigan Tech learn how to communicate technical and scientific concepts, as well as incorporate social and ethical values into science and technology.

The liberal arts degree program will introduce you to many academic areas, including science, math, literature, the arts, languages, philosophy, and history. Students can also take courses in other fields, such as engineering and business administration. This educational combination prepares you for careers in a variety of businesses, industries, or government agencies.

At Michigan Tech, you can complement your liberal arts education with technical courses, tailoring your program to fit your career goals. A liberal arts undergraduate degree can also lead to graduate studies in law, medicine, or other fields.
MTU’s liberal arts graduates obtain a variety of positions with large and small businesses, government agencies, research organizations, and educational institutions.

The associate degree program in humanities offers course work in English, modern languages, sciences, math, and social sciences. In addition to a well-rounded education, the AS in Humanities can be the foundation for a bachelor’s program.

We also offer certificates and advanced certificates in French, German, and Spanish language and area study. Modern language skills are becoming increasingly important as more and more companies compete in global markets.

Scientific and Technical Communication—BA, BS

In today’s technologically complex society, individuals are needed who can translate technical information into easy-to-understand language. Scientific and technical communicators write documentation for computer software and user manuals for cars and appliances; produce promotional videos for products and services; and prepare scripts for radio, television, and slide presentations.

Michigan Tech’s scientific and technical communication program is the largest of its kind in the nation. Our students get practical experience by completing projects for university, corporate, or government clients.

Because Michigan Tech is a leading technological university, you will get a strong background in a technical field while developing your communication skills.

Employers of MTU scientific and technical communication graduates include Texas Instruments, Unisys, Dow Chemical, IBM, General Motors, and Phanes Press.

Mathematical Sciences—BS, MS, PhD

Mathematics, the language of science, provides tools for discovery, understanding, and communication. All MTU math students take core courses before pursuing one of four options.

- General Mathematics—fundamental math: set theory, algebra, geometry, and construction of proofs
- Applied/Computational Mathematics—differential equations, vector analysis, numerical analysis, and linear algebra; design and analysis of numerical methods used in applied mathematics, basic computer science, and computational modeling
- Statistics—designing experiments, analyzing data, and modeling of systems involving uncertainty
- Actuarial Science—includes statistical calculations, such as life expectancy, and calculating premiums, reserves, and dividends
- Discrete Mathematics—mathematical reasoning: set theory, functions, cardinal numbers, Boolean logic, methods of proofs, combinatorics, recursion and induction, relations and graphs.

Mathematicians are needed for programming, numerical analysis, and logical design. And, because the computer makes it possible to develop and run complex mathematical models, business and industry depend on mathematicians to answer manufacturing questions. Mathematicians also find employment as teachers; as actuaries, who calculate premium rates for insurance companies; and as statisticians, who are experts on such matters as data analysis, predictions, and reliability testing.

Many MTU mathematical sciences graduates choose to pursue master’s and PhD degrees. Others find employment with companies such as Ford, IBM, Unisys, Smith Industries Aerospace, and MIT Lincoln Laboratory; and with government agencies such as the Social Security Administration, Bureau of Labor Statistics, and the National Security Agency.

Physics—BS, MS, PhD; Applied Physics—BS

Physics describes how the physical world works, analyzing the laws of nature. The world of the physicist ranges from the tiniest particles of subatomic matter to galaxies and beyond, encompassing computer circuitry, lasers, spacecraft orbits, medical imaging, and the search for controlled fusion power. Most modern technology rests on physics.
The physics program is primarily for those planning to pursue graduate studies. Our students conduct leading-edge research in computational physics and imaging. The applied physics program is particularly appropriate for students seeking employment upon graduation, rather than graduate school enrollment. Applied physics combines physics with a related science or engineering field, using physics to develop new products and processes. Michigan Tech’s BS degree programs in physics and applied physics are comparable to honors programs at other universities. Seniors work on a yearlong project involving research with a faculty member and graduate students.

The many specialties within physics are reflected in career options. An acoustical physicist might work on the design of a concert hall, stereos, or synthesizers; a tribophysicist seeks ways to reduce the damaging effects of friction, whether in automobile engines or in artificial heart valves; and a medical physicist works with radiation, ultrasound, and sophisticated imaging techniques such as magnetic resonance imaging. An optical physicist often works with lasers and the design of optical “circuits” for computers.

Most MTU physics graduates attend graduate school. Those who enter the job market work for a variety of employers, including IBM, Ford, Hitachi, Mercury Marine, MIT Lincoln Laboratory, and the Institute of Paper Science and Technology.

Social Sciences—BS; Liberal Arts (history option)—BA

Social scientists study the behavior and relationships of individuals, groups, societies, and nations, using science to analyze human behavior and values. Specialties range from psychology to political science to archaeology. We offer an option in science, technology, and society as well as a history option available through the bachelor’s program in liberal arts.

Science, technology, and society (STS) deals with the effects of scientific and technological change on individuals and social institutions. The STS program is flexible and focuses on the role of science and technology in modern society. This program can link a substantial technical component with a liberal arts education.

The social sciences department offers a certificate in international technology and society. Because American businesses operate in an increasingly global environment, technical graduates need to understand the complex international interactions of technology and society.

Careers requiring a foundation in the social sciences include city and regional planning and development, public administration, market research, personnel relations, counseling and related mental-health professions, and diplomatic affairs. A social sciences degree is also excellent preparation for law school.

About half of Michigan Tech’s social sciences graduates pursue graduate studies; others obtain employment in government service, personnel administration, law firms, libraries, and educational institutions.

For more information on programs offered through Michigan Tech’s College of Sciences and Arts, contact

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February 2000/PSSM