Computer Engineering

Western Michigan University

Engineering is a profession in which people combine their knowledge of the mathematical and natural sciences with their judgment in order to economically use natural materials and forces to benefit human beings.

Computer engineering deals with the research, development, design, operation, and application of electronic digital computers and systems

The Undergraduate catalog for Computer Engineering is available online. Click here.

Program Description

The Department of Electrical and Computer Engineering at Western Michigan University offers a four-year program leading to a *Bachelor of Science in Engineering degree in computer engineering.* The Program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.

The program is designed primarily for students interested in the analysis, design, and application of electronic digital computers and systems. It covers the architecture and physical construction (hardware) of digital computers, as well as important programming (software) aspects of digital computers and systems.

Courses in mathematics, physics, electrical engineering, and computer science give you the background necessary to solve both the hardware and software problems you'll encounter in designing and applying digital computers and systems.

Because all engineers must consider non-technical as well as technical factors in the design process, the program includes courses in the humanities, social sciences, and communication.

Design courses in your senior year cap off your studies and give you a practical, integrated experience in engineering design.

Program Educational Objectives

Depth:
Graduates demonstrate an understanding of the fundamental knowledge prerequisite for the practice of, or for advanced study in, electrical and/or computer engineering, including its scientific principles, rigorous analysis and creative design.

Breadth:
Graduates utilize general and discipline-specific skills and knowledge acquired as students in our program to be successful in diverse professional fields. Success in these fields necessitates that our graduates be technically competent, exhibit problem-solving skills, engage in life-long leaming, and be effective team members.

Professionalism:
Graduates exhibit professional ethics, are effective team members, and demonstrate communication and leadership skills as contributing members within their professional organizations.

Career Options

Engineering provides excellent preparation for either a technical or a management career.

Computer engineers engage in the same kinds of work as electrical engineers, but they deal primarily with computers.

In the field of computers you may concentrate on:

Automation, or computer control of machining, assembly, or other manufacturing processes

Computer-aided design systems, in which a part of the design process is carried out by computer

Speech and pattern recognition

Data communication between computers

Computer peripherals, such as sensors, terminals, displays, printers, readers, and other input-output devices

Microcomputers and their applications

Cooperative Education

A cooperative education program is available if you wish to combine your education with industrial experience. After you complete your third semester of study, you can alternate between studying on campus and working in industry every other semester.

Positions are available in a broad range of industries in manufacturing, product development, and quality control.

Special Opportunities

Computer engineering students have an opportunity to participate in the activities of WMU's student branch of the Institute of Electrical and Electronics Engineers.

Activities include regular meetings featuring guest speakers, technical films, field trips, and social gatherings.

Seminars are also sponsored by the Department of Electrical and Computer Engineering so students can hear professionals speak on current topics in electrical and computer engineering.

Facilities

Instructional facilities are well-equipped and include individual laboratories for circuits, electronics, electrical machines, digital logic, and microcomputers. Facilities also include two shielded rooms, an anechoic chamber, and some special purpose equipment.

Computer terminals distributed throughout the campus provide access to a network of mainframe computers. A variety of microcomputers, graphic terminals, and plotters are also available in the Computer-Aided Engineering Center of the College of Engineering and Applied Sciences.

Preparation

A minimum of three and a half years of high school college-preparatory mathematics, including algebra, geometry, and trigonometry, is necessary to enter the calculus courses required in the program. However, WMU offers a variety of courses that will allow you to enter the mathematics sequence at virtually any level, although you may not be able to complete degree requirements within a four-year period.

Courses in physics, chemistry, general science, English, writing, and speaking are also recommended.

If you plan to transfer from a two-year or four-year college, you're required to contact an academic advisor from the Department of Electrical and Computer Engineering to determine your advanced standing. Transfer credit is granted for courses that satisfy WMU's requirements whenever you can proceed in subsequent courses without difficulty.

Admission

Admission to WMU is processed by the Office of Admissions and Orientation. For admission requirements, consult the University's Undergraduate Catalog or contact the admissions and orientations office. Write the office or call

(269) 387-2000.

Advising

You and your academic advisor will plan your program to take full advantage of your educational experience at WMU. For an appointment with an advisor, call (269) 276-3270.

Financial Aid

Information about financial assistance, such as scholarships, employment opportunities, loans, and grants, is available from the Office of Student Financial Aid and Scholarships by calling (269) 387-6000.

Placement

WMU students and alumni may call Career Services at (269) 387-2745 for help with total job-search planning.

Accreditation

Accredited by the Engineering Accreditation Commission of ABET, Inc., 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 - telephone: (410) 347-7700.

Further Information

For further information about the computer engineering program, please contact:

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