Computer Engineering

The Electrical and Computer Engineering Department offers an accredited program for the Bachelor of Science Degree in Computer Engineering (BScpE). The Computer Engineering program is accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 - telephone: (410) 347-7700.

In the fast-paced field of computers, the computer engineering graduate will be prepared for careers in exciting innovative technologies including embedded systems, programmable logic, hardware/software co-design, and digital signal processing. With increased processor capacity and processing speeds, re-programmable logic devices offer far-reaching opportunities for the computer engineer to create new applications unheard of today. The computer engineer uses knowledge of both electronics hardware and software to achieve state-of-the-art solutions, often involving programmable logic devices and microprocessors. The computer engineering curriculum is designed to prepare students for engineering careers where programming and software skills are blended with the understanding of hardware design.

The computer engineering program at MSU is interdisciplinary and incorporates substantial coursework from both the Electrical and Computer Engineering Department and the Computer Science Department. All students in the Electrical and Computer Engineering Department develop common skills in basic science, mathematics, basic electronics and circuits; however, the computer engineering student diverges from the electrical engineering student by taking more computer science and computer architecture courses, as well as a full complement of courses in microprocessors and programmable devices.

In the senior year each computer engineering student takes part in a capstone design project. This project allows the student to function as part of a team on a real world problem, and the student, in addition to accomplishing the design, must also communicate his or her work in both a written paper and an oral presentation. All projects are intended to bring the student’s academic training to a logical conclusion and further develop the problem-solving skills and the communication skills of the computer engineering graduate.

The computer engineering program educational outcomes are:

a. An ability to apply knowledge of mathematics, science, and engineering.

b. An ability to design and conduct experiments, as well as to analyze and interpret data.

c. An ability to design a system, component, or process to meet desired needs.

d. An ability to function on multi-disciplinary teams.

e. An ability to identify, formulate, and solve engineering problems.

f. An understanding of professional and ethical responsibility.

g. An ability to communicate effectively.

h. The broad education necessary to understand the impact of engineering solutions in a global and societal context.

i. A recognition of the need for, and an ability to engage in lifelong learning.

j. A knowledge of contemporary issues.

k. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

l. Knowledge of the principles of project management and design trade-offs.

m. An ability to program microcontroller/microcomputer systems using assembly and high-level languages.

n. An ability to design digital systems using modern design tools.

o. An ability to analyze electrical and electronic systems.

p. An ability to implement real-time systems.

Student Performance and Retention Requirements
Students are required by Board of Regents policy to achieve a C- or better grade in each class used to satisfy the BScpE degree requirements.

Undergraduate Programs
• Bachelor of Science in Computer Engineering (http://catalog.montana.edu/undergraduate/engineering/electrical-computer-engineering/computer-engineering/bs-computer-engineering)
• Computer Engineering Minor (Non-Teaching) (http://catalog.montana.edu/undergraduate/engineering/electrical-computer-engineering/computer-engineering/computer-engineering-nonteaching-minor)

Graduate Programs
Students enrolled in the Electrical Engineering (M.S. and M.Eng.) graduate program or the Electrical & Computer Engineering (Ph.D.) graduate program can pursue cutting edge computer engineering research projects.

Please refer to the ECE graduate program section (http://catalog.montana.edu/graduate/engineering/electrical-computer-engineering) of the catalog for more information.