DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

Herbert Hess, Chair (214 Buchanan Engr. Lab. 83844-1023; phone 208-885-4341; www.ece.uidaho.edu (http://www.ece.uidaho.edu/)).

The Department of Electrical and Computer Engineering offers degree programs in the closely related fields of electrical engineering and computer engineering. The electrical engineering program spans the subdisciplines of analog electronics, electric power, electromagnetics, computers, and communication and control systems. The computer engineering program focuses on the architecture, programming, and application of digital computers. Bachelor of Science (B.S.), Master of Science (M.S.), and Master of Engineering (M.Engr.) degrees are offered in both electrical engineering and computer engineering. The Doctor of Philosophy (Ph.D.) degree is offered in electrical engineering and encompasses research in both electrical and computer engineering.

Mission and Vision

The mission of the department is to educate students for the professional practice of electrical and computer engineering by offering undergraduate and graduate programs that encourage lifelong learning, foster teamwork and leadership, and promote creative discovery. The department is committed to maintaining the highest possible standards in teaching, scholarship, advising, and service. The vision of the department is to continue to expand its role in the state and region as a provider of outstanding undergraduate and graduate education programs in electrical and computer engineering.

Continuous Improvement

The department uses a continuous improvement process to attain the program educational objectives set forth below. Each of the broad objectives is associated with a number of specific student outcomes that are measured by a variety of assessment tools. Programs are assessed annually to identify problems and initiate changes to ensure that program objectives are being met. Additional information about the assessment and continuous improvement process is available under the department web page.

The department is proud of its over 100-year history and its more than 2,500 alumni. Our graduates have become productive engineers and industrial and community leaders all over the nation and the world, and they are actively recruited by major employers of electrical and computer engineers. The Bachelor of Science (B.S.) degree programs in electrical engineering and computer engineering at the University of Idaho are accredited by the Engineering Accreditation Commission of ABET (http://www.abet.org/), under the commission's General Criteria and Program for Electrical, Computer, Communications, Telecommunication(s), and Similarly named programs. Graduates of our program consistently score higher than the national average on the Fundamentals of Engineering examination administered by the National Council of Examiners for Engineering and Surveying.

The department offices and laboratories are located in the Buchanan Engineering Laboratory and the Gauss-Johnson Laboratory on the Moscow campus. Courses are also offered through branch campuses located in Boise, Idaho Falls, and Coeur d'Alene, and through the Engineering Outreach program.

Electrical Engineering Undergraduate Program

Electrical engineering involves the application of electrical phenomena for the benefit of society. Electrical engineers design and use circuits and systems for computers, instruments, communications devices, and power conversion equipment.

Program Educational Objectives

The program educational objectives of the electrical engineering program include the following:

1. Engage and contribute solutions to the latest problems in industry, government, non-profit organizations or academia through application of their engineering knowledge;
2. Continue their professional growth through graduate studies, professional training, and other educational opportunities; and
3. Serve society through collaboration and volunteering across public, private, governmental, and non-profit agencies.

Students in the electrical engineering program are assigned an advisor upon entry into the program. The advisor helps the student prepare appropriate class schedules each semester and provides guidance on other academic and professional issues. Students can take an electrical engineering course in their freshman year that introduces them to the field and helps prepare them for further study. Required courses in the freshman year help develop a solid foundation in physics, chemistry, mathematics, and writing. Foundation courses in science, mathematics, and engineering are continued in the sophomore year, including the first two courses in electrical circuits. The junior year exposes the student to a wide variety of electrical engineering courses to develop breadth in electrical engineering knowledge and skills. In the senior year, students specialize in specific areas of electrical engineering through the choice of technical electives. Students also take a two-semester sequence of design courses where students learn to design, test, and build an electrical engineering circuit or system. Additional courses in the humanities, social sciences, and English help prepare the graduate to become a well-rounded and productive member of society.

Computer Engineering Undergraduate Program

Computer engineering involves the application of the principles of electrical engineering and computer science for the benefit of society. Computer engineers design and use digital computers for instrumentation, control, communication, and power conversion systems.

Program Educational Objectives

The program educational objectives of the computer engineering program include the following:

1. Engage and contribute solutions to the latest problems in industry, government, non-profit organizations or academia through application of their engineering knowledge;
2. Continue their professional growth through graduate studies, professional training, and other educational opportunities; and
3. Serve society through collaboration and volunteering across public, private, governmental, and non-profit agencies.

Students in the computer engineering program are assigned an advisor upon entry into the program. The advisor helps the student prepare appropriate class schedules each semester and provides guidance on other academic and professional issues. In the freshman year, students

take introductory courses in physics, mathematics, and computer science to help develop a solid foundation based on these fundamental areas. The sophomore year continues with more physics and mathematics, but also introduces the students to more advanced courses in computer science, computer engineering, and electrical circuits. The junior year provides breadth in several areas of electrical and computer engineering and computer science including electronics, signals and systems, microcontrollers, programming languages, and operating systems. The senior year allows the student to develop some depth of knowledge in selected areas through a variety of technical elective courses. In addition, the student takes a two-semester sequence of design courses where students learn to design, test, and build a computer engineering system. Additional courses in the humanities, social sciences, English, and public speaking help prepare the graduate to become a well-rounded and productive member of society.

*Note: In addition to college requirements for admission to classes (see "*Admission to Classes (https://catalog.uidaho.edu/colleges-related-units/engineering/)*" under the* College of Engineering (https://catalog.uidaho.edu/colleges-related-units/engineering/) *section), students majoring in electrical engineering or computer engineering must earn a grade of C or better in certain lower division courses and a passing grade in ECE 2920 as prerequisite to any upper-division course in electrical engineering or computer engineering. Advisor's approval is required for admission to all ECE courses.*

Majors

- Computer Engineering (B.S.Comp.E.) (https://catalog.uidaho.edu/colleges-related-units/engineering/electrical-computer-engineering/computer-engineering-bscompe/)
- Electrical Engineering (B.S.E.E.) (https://catalog.uidaho.edu/colleges-related-units/engineering/electrical-computer-engineering/electrical-engineering-bsee/)

Certificates

- Microelectronics Fabrication Undergraduate Academic Certificate (https://catalog.uidaho.edu/colleges-related-units/engineering/electrical-computer-engineering/microelectronics-fabrication-undergraduate-certificate/)
- Semiconductor Design Undergraduate Academic Certificate (https://catalog.uidaho.edu/colleges-related-units/engineering/electrical-computer-engineering/semiconductor-design-undergraduate-certificate/)

Electrical and Computer Engineering Graduate Program

Candidates must fulfill the requirements of the College of Graduate Studies and of the Department of Electrical and Computer Engineering. See the College of Graduate Studies (https://catalog.uidaho.edu/colleges-related-units/graduate-studies/) section for the general requirements applicable to each degree.

- Computer Engineering (M.Engr.) (https://catalog.uidaho.edu/colleges-related-units/engineering/electrical-computer-engineering/computer-engineering-mengr/)
- Computer Engineering (M.S.) (https://catalog.uidaho.edu/colleges-related-units/engineering/electrical-computer-engineering/computer-engineering-ms/)

- Electrical Engineering (M.Engr.) (https://catalog.uidaho.edu/colleges-related-units/engineering/electrical-computer-engineering/electrical-engineering-mengr/)
- Electrical Engineering (M.S.) (https://catalog.uidaho.edu/colleges-related-units/engineering/electrical-computer-engineering/electrical-engineering-ms/)
- Electrical Engineering (Ph.D.) (https://catalog.uidaho.edu/colleges-related-units/engineering/electrical-computer-engineering/electrical-engineering-phd/)

Certificates

- Advanced Microelectronics Fabrication Graduate Academic Certificate (https://catalog.uidaho.edu/colleges-related-units/engineering/electrical-computer-engineering/advanced-microelectronics-fabrication-graduate-certificate/)
- Advanced Semiconductor Design Graduate Academic Certificate (https://catalog.uidaho.edu/colleges-related-units/engineering/electrical-computer-engineering/advanced-semiconductor-design-graduate-certificate/)
- High-Speed Circuits and Systems Graduate Academic Certificate (https://catalog.uidaho.edu/colleges-related-units/engineering/electrical-computer-engineering/high-speed-circuits-and-systems-graduate-certificate/)
- Power System Protection and Relaying Graduate Academic Certificate (https://catalog.uidaho.edu/colleges-related-units/engineering/electrical-computer-engineering/power-system-protection-relaying-graduate-academic-certificate/)
- Smart Grid Cybersecurity Graduate Academic Certificate (https://catalog.uidaho.edu/colleges-related-units/engineering/electrical-computer-engineering/smart-grid-cybersecurity-graduate-certificate/)