Electrical Engineering

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https://engineering.missouri.edu/academics/eecs/
Department of Energy (DoE), and Department of Defense (DoD) as well as Microsoft, Honeywell and Monsanto, to cite just a few.

Research facilities are well established around faculty expertise in the broad emphasis areas of Communications and Signal Processing (SP), Intelligent Systems and Robotics (ISR), Physical and Power Electronics (PPE), Applied Physics (AP), Systems Modeling and Control (SMC), Computer Architecture and Systems (CAS), Nano/Micro Technology (NMT). Faculty in the Electrical and Computer Engineering Program work closely with faculty in the Computer Science Program within the EECS Department.

For highly motivated undergraduate students a fast-track five year program of study leading to the BS plus MS degrees in CpE or EE is available. Accelerated BS to MS Program (https://gradschool.missouri.edu/admissions/eligibility-process/accelerated-masters-applicants/)

Teaching assistantships with the EECS Department and research assistantships with faculty are available to fund graduate study especially at the PhD level.

Summary

The ECE Program offers undergrad degrees:

- Bachelor of Science in Computer Engineering (BS CpE) (http://catalog.missouri.edu/collegeofengineering/computerengineering/bsee-computer-engineering/)
- Bachelor of Science in Electrical Engineering (BS EE) (http://catalog.missouri.edu/collegeofengineering/electricalengineering/bsee-electrical-engineering/)
- Dual Bachelor of Science in Electrical Engineering & Physics

with many more options for dual degrees within the EECS department and outside.

Graduates with BS degrees in CpE, EE, CS or closely related areas can choose to pursue advanced study towards the following degrees:

- Master of Science in Computer Engineering (MS) (http://catalog.missouri.edu/collegeofengineering/computerengineering/ms-computer-engineering/)
- Master of Science in Electrical Engineering (MS) (http://catalog.missouri.edu/collegeofengineering/electricalengineering/ms-electrical-engineering/)
- Doctoral Degree in Electrical and Computer Engineering (PhD) (http://catalog.missouri.edu/collegeofengineering/electricalcomputerengineering/phd-electrical-computer-engineering/)

The MS and PhD are professional research degrees designed to prepare students for advanced professional careers, including teaching and research at university level, as well as research and development in industrial, government, and nonprofit organizations.

The ECE Program offers learning and research opportunities for both undergraduate and graduate students in the areas of:

- mobile video communication;
- wireless and digital communications;
- satellite remote sensing;
- geospatial image and video processing;
- computational neuroscience;
- systems biology;
- eldercare technology;
- computational intelligence, including machine learning, pattern recognition, deep learning, fuzzy systems;
- computer vision;
- robotic vision;
- robotic assistive technology;
- human/robot interaction;
- landmine detection;
- pulsed power and plasma technology;
- nuclear and renewable energy systems;
- semiconductor devices;
- analog/mixed-signal/digital integrated circuits;
- photonics;
- accelerators and beams;
- antennas and radar systems;
- nano and microelectromechanical systems;
- bioMEMS;
- heterostructure and microfabrication;
- feedback and control systems;
- parallel processing;
- computer architecture;
- autonomous systems;
- real-time embedded architectures;
- high performance computing;
- sensor networks; and
- human-computer interfaces.

Research

The ECEP in EECS is the most research-active program among all programs and units in the College of Engineering at the University of Missouri, with over $5 million in expenditures with faculty conducting research in the broad emphasis areas of:

- Communications and Signal Processing (CSP)
- Intelligent Systems and Robotics (ISR)
- Physical and Power Electronics (PPE)
- Applied Physics (AP)
- Systems Modeling and Control (SMC)
- Computer Architecture and Systems (CAS)
- Nano/Micro Technology (NMT)

Faculty


Assistant Research Professor H. Ali akbarpour**, A. Buck

Assistant Teaching Professor D.E. Ufuktepe*, A. Shiri Sichani*

Associate Teaching Professor J. Ries, J. Fischer
In addition to the major core requirements, students must complete all University graduation requirements including University general education, as well as all degree and college or school requirements.

**Electrical and Computer Engineering (ECE) Honors Program**

The ECE Honors Program follows the general rules and philosophy of the College of Engineering Honors Program. Students may enter the program from the beginning of the junior year and must have a GPA of 3.0/4.0 at the start. Eligible students participate in the program by enrolling in ECE 4995 Undergraduate Honors Research in Electrical Computer Engineering for one to three credit hours, which replaces an equivalent number of hours of ECE technical electives.

The heart of the program is a research or advanced design project culminating in an undergraduate honors thesis. The project is conducted under the supervision of the honors advisor, who is an ECE faculty member selected by mutual agreement between the student and the professor. Satisfactory completion of the project requires approval (signatures) of the honors thesis by both the honors advisor and an additional faculty member, who serves as second reader of the thesis. Students who complete the program and graduate with a GPA of at least 3.0 receive the designation “Honors Scholar in Engineering” at graduation and on their diploma.

Another valuable feature of the Honors Program is that participants may reduce the number of credit hours required for degree completion to the University minimum of 120 by substituting up to six hours of credit from graduate courses through dual (undergraduate/graduate) enrollment during the last four semesters of the undergraduate program and after completion of the honors project.

**Graduate**

- MS in Electrical Engineering (http://catalog.missouri.edu/collegeofengineering/electricalengineering/ms-electrical-engineering/)

The Department of Electrical Engineering and Computer Science (ECE) offers both the Master of Science with a major in Electrical Engineering and the Master of Science with a major in Computer Engineering, as well as a Doctor of Philosophy Degree in Electrical and Computer Engineering. The graduate program in both degrees at the University of Missouri provides students with the requisite fundamentals in either discipline and prepares them for beginning practice in both the traditional and emerging fields of these disciplines. The degree programs are flexible 126-credit structures that provide the fundamentals of engineering, in addition to a thorough coverage of the major specialties within their respective fields. In addition, technical electives allow concentration in selected areas.

Students interested in interdisciplinary studies may use some electives to study business, pre-medicine, prelaw, and other areas. Students are able to choose from a wide variety of courses offered by other departments in the College of Engineering, as well as from other MU colleges, taking advantage of the multidisciplinary nature of the campus.

Both the Bachelor of Science in Electrical Engineering (BS EE) and the Bachelor of Science in Computer Engineering (BS CoE) require that students earn a 2.0 GPA or better in all courses that have an MU engineering prefix. All ECE courses require a grade of C or better in ECE prerequisites.

Engineering design in both the electrical engineering and computer engineering programs is provided through an integrated laboratory structure. Beginning with the first laboratory course in the fourth semester of each program, students have a significant design and laboratory experience in each semester of their respective programs.