The Mines electrical engineering graduate program places students at the center of technology development with the capacity to expand their skills and knowledge of the broad scope of energy applications, power systems and microwave devices. With three main focus areas—antennas and wireless communications; energy systems and power electronics; and information and systems sciences—this program offers numerous opportunities with the support of a multidisciplinary community. Students can benefit from the expertise of Mines faculty, industry partners and government agencies to address some of our society’s most critical challenges.

DEGREE OPTIONS

- **Doctor of Philosophy:** 72 credit hours, comprised of coursework and research credits. PhD students must pass the qualifying exam and complete and successfully defend a satisfactory thesis.
- **Master of Science (thesis and non-thesis):** 30 credit hours. The thesis-based MS requires 24 hours of coursework and 6 credit hours of thesis research.
- **Certificate:** 12 credit hours of coursework. Students may pursue a certificate in data science for signals and systems; antennas and radar technology; radio-frequency and microwave engineering; or smart-grid, power electronics and electrical power systems.
MS AND PHD SPECIALIZATION TRACKS

**Antenna and Wireless Communications**
The department has internationally recognized faculty in this area, with diverse expertise in computational electromagnetics, electromagnetic radiation and scattering, remote sensing, electromagnetic measurements, visualization and wireless communications. Students may pursue a master’s degree-with thesis or non-thesis option.

**Information and Systems Sciences**
ISS is an interdisciplinary research area encompassing the fields of control systems, signal and image processing, compressive sensing and optimization. This group researches the development, characterization and implementation of algorithms for processing and acting upon data sources, as well as research directed toward applications in energy systems, image analysis, communication systems and robotics.

**Energy Systems and Power Electronics**
ESPE focuses on the design, operation and control of energy systems, from the electric power grid to small-scale systems. We work on solutions to control and integrate renewable energy resources into the power grid, develop optimal algorithms to enhance the operation of energy systems, build models and solutions to analyze and control electric machines, and find ways to reinforce the power grid against natural and man-made hazards.

**ADMISSION REQUIREMENTS**

- A bachelor’s degree in computer science, a physical science or mathematics with a grade-point average of 3.0 or better on a 4.0 scale.
- Graduate Record Examination (GRE) with quantitative reasoning section score of 151 or higher. Applicants who have graduated from Mines within the past five years are not required to submit GRE scores.
- For international applicants or applicants whose native language is not English, a TOEFL score of 79 or higher (or 550 for the paper-based test, 213 for the computer-based test) is required. In lieu of a TOEFL score, an IELTS score of 6.5 or higher will be accepted.

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