ELECTRICAL ENGINEERING, B.S. (ENGINEERING)

Seven Penn State campuses are scheduled for closure after Spring 2027: DuBois, Fayette, New Kensington, Mont Alto, Shenango, Wilkes-Barre, and York. New students are not being admitted at these campuses.

Begin Campus: Any Penn State Campus

End Campus: University Park

Program Description

Electrical Engineering (EE) is one of the broadest of all engineering majors and is much more than just building electrical circuits. Electrical engineering is the application of electronics, electrical science and technology, and computer systems to the needs of society. An electrical engineer is responsible for designing and integrating electronic/electrical systems in diverse industries such as defense, communications, transportation, manufacturing, health care, construction, and entertainment.

The mission of our undergraduate program is to provide a high-quality education in electrical engineering for our students and to instill in them the attitudes, values, and vision that will prepare them for lifetimes of success, continued learning, and leadership in their chosen careers. A combination of required and elective courses ensures that students acquire a broad knowledge base in electrical circuits, digital systems, electronic devices, electromagnetics, and linear systems, as well as expertise in one or more areas of specialization. Additional problem-solving skills and practical experience are developed through design projects and laboratory assignments, which also provide opportunities for developing team-building and technical communication skills.

What is Electrical Engineering?

Electrical engineering is a rapidly evolving field that serves as the foundation for modern cyber-physical systems such as autonomous vehicles, robotics, smartphones, AI-powered technology, and healthcare platforms. These systems often mirror and expand upon human capabilities, and are built around four core functions that electrical engineers can specialize in:

- Sensing bridges physical and cyber domains by capturing physical phenomena (temperature, pressure, motion) and converting it into digital and analog signals
- Communication connects cyber-physical and embedded systems to enable interoperability by architecting secure, reliable, and efficient transmission of data and information
- Processing provides cyber-physical systems with the ability to interpret continuous physical events in digital (sampled) and analog formats and dynamically transform input data into meaningful output to adapt to complex environments
- Control bridges cyber and physical domains by executing digital commands as physical actions using open and closed-loop feedback mechanisms that allow systems to achieve and maintain desired behaviors

You Might Like This Program If...

- You are inspired by cutting edge cyber-physical system applications such as autonomous vehicles, robotics, AI-powered technology, smart power grids, and next-generation healthcare technologies.
- You enjoy using mathematics, physics, and computer programming as tools to solve meaningful, real-world engineering challenges.
- You want a versatile, future-ready degree that opens doors to high impact careers across industry, research, and emerging technology sectors.