

ELECTRICAL ENGINEERING, B.S. (BEHREND)

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: Erie

Program Description

This major provides students with a strong foundation in electrical engineering through a combination of classroom study, projects, and laboratory experience. Analysis and design of electrical and computer systems are stressed. Built upon a core of science and mathematics courses, this major has the objective of educating graduates to be problem solvers. Students acquire the ability to work as members of a team toward successful attainment of a common goal, preparing them for work in industry, or further study in graduate school. In addition, written and oral communication skills are developed from an early stage, culminating in a senior design project that stresses communication as well as engineering content.

In addition to completing a broad-based science and mathematics core, students pursue their interest in electrical engineering by studying the principles of electrical circuits and microelectronics, digital and computer systems, control and communications systems, and electromagnetic fields and waves. Students obtain a broad-based electrical engineering education that is specialized through the selection of technical electives courses. The student will be required to analyze and solve a significant electrical engineering design problem during the senior year.

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 curious about how electrical and electronic systems function.
- You are interested in engineering, math, and physics.

- You are looking for a broad discipline with career flexibility.
- You enjoy working on team-based projects.