What is the Study of Electrical Engineering?

Western’s Engineering and Design department offers a B.S. degree in Electrical Engineering. The program serves current students, industry, the University, and the citizens of the state of Washington by preparing students to find pragmatic engineering solutions to problems, while understanding the impact of their solutions in a global, economic, environmental, and societal context.

The educational experience we provide emphasizes lab-based experiential learning, teamwork, communication, and critical thinking, while the program curriculum provides current, practical engineering knowledge built on a sound mathematical and science background. The student begins the major in the second quarter of their freshman year with an orientation course and is generally enrolled in one or more major courses each quarter until graduation. The many laboratory courses provide a combination of practical experience with design and ultimately lead to a culminating project that spans the senior year.

What kind of job would an Electrical Engineer have?

A graduate will work in the electrical engineering field in positions such as engineering applications, embedded systems, electronic systems analysis, design and development, applications, test engineering, and technical sales and service. Electrical Engineers develop, design, test, and supervise the manufacture of electrical equipment. This can include electric motors, machinery controls, lighting/wiring in buildings, radar/navigation systems, communications systems, and power generation, control, and electrical systems for automobiles/aircraft, and transmission devices used by electric utilities.1

Program Concentration Options:

**ELECTRONICS**
Electronics courses involve the development, design, and application of circuits, devices, and firmware for embedded systems. Content includes digital and analog electronics, embedded microcontrollers, communications, controls, and digital signal processing.

**ENERGY**
Energy courses include a combination of advanced electrical engineering courses and interdisciplinary courses in the sciences, economics, policy, and the environment. Topics deal with the sources, generation, control and utilization of electric power, energy conversion and storage, and smart power topics such as system analysis, protection and stability, solid state motor control, and industrial process control systems. Capstone projects are generally in collaboration with faculty in Western’s Institute for Energy Studies.

Alumni Employment:

**Positions:**
- Electronic Design Engineer
- Systems Test Engineer
- Global Support Engineer
- Device Development Engineer
- Embedded Controls Engineer
- Hardware Design Engineer

**Companies:***
- BMT Scientific Marine Services, Escondido, CA
- Boeing, Seattle, WA
- Conversica, Bellingham, WA
- Eldec, Lynnwood, WA
- f5 Networks, Seattle, WA
- Fluke, Everett, WA
- Genie Industries, Redmond, WA
- Intel, Santa Clara, CA
- Hewlett-Packard, Palo Alto, CA
- PACCAR Technical Center, Mt. Vernon, WA
- Physio Control, Redmond, WA
- Universal Avionics, Redmond, WA

Program/Degree Quick Facts:

- Bachelor of Science in Electrical Engineering
- 24-30 students per year
- 4 year degree with taking 15-16 credits per quarter
- 145-150 major credits for degree
- Pursuing accreditation through the Accreditation Board for Engineering and Technology (ABET)
- Average starting salary: $65,110
- Median salary for degree: $89,630

To learn more, visit our website: cse.wwu.edu/engd

Resources: 1: careercornerstone.org/eleceng; 2: based on data collected from survey of past five years of WWU Electronics Engineering Technology graduates; 3: bls.gov/ooh/architecture-and-engineering/electrical-and-electronics-engineers.htm
Electrical Engineering (EE) Program Information

Electrical Engineering courses are only offered once per year, so if a student gets off-sequence with the prescribed course of study, their time to degree completion may exceed four years. Similarly, students that are not ready to take MATH 124 (Calculus I), CHEM 121 (General Chemistry I), and PHYS 161 (Physics with Calculus I) their first quarter freshman year may not be able to complete the program in four years.

Transfer Students:
Most of the first year courses for the EE program are standard offerings at community colleges, excluding EE 110 (Intro to Electrical Engineering). Some community colleges do offer the equivalent of EE 111 (Circuit Analysis), so if a student is able to complete this course ahead of time, transfer students may apply to the major without EE 110 (and take it during their first Winter Quarter at Western). Transfer students should expect to spend at least three years at WWU completing this degree. Having completed a transfer degree doesn’t mean there is only two years remaining at WWU. Students are encouraged to seek advising early from the Pre-major Advisor to ensure foundational courses will transfer and count towards program requirements.

Application Process:
Students must initially declare as a Pre-major in Electrical Engineering. Students can do this once they begin courses at WWU in person in ET204. The major application period for the EE program is at the end of the Spring Quarter. Students must have completed eight required courses (below). Students are generally enrolled in two or three required courses at the time of application. Accepted students will begin major coursework fall quarter of Year Two on the planning guide. For more information on the program admissions process and the online application, visit the Admissions link on the EE webpage: cse.wwu.edu/engineering-design/admissions-3.

Required Coursework (same requirements for both the Energy and Electronics Concentrations):
MATH 124, MATH 125, MATH 204, PHYS 161, PHYS 162, CSCI 140, EE 110, and EE 111

Although the minimum grade for all courses in the major is a C-, acceptance to the major is based primarily on academic performance in the above prerequisite courses, so maintaining a high GPA in these courses is advantageous. Students are encouraged to seek advising about GPA goals. Twenty-four to thirty students are accepted into the program each year, and the application process is competitive.