

What can I do with a degree in...

ELECTRICAL ENGINEERING?

Why study

ELECTRICAL ENGINEERING?

Electrical Engineering (EE) is a challenging and rewarding course of study that requires a love of math, strong study habits and the ability to visualize abstract concepts. The EE program is made up of like-minded students in small classes with faculty who have a thorough knowledge of the topics they are teaching as well as practical experience in their fields.

Emphasis on areas such as communication skills, professional and ethical responsibility, lifelong learning and contemporary issues complements the technical aspects of the engineering program. The combination of engineering and complementary course work inherent in the program ensures that EE graduates are well-rounded, able to work effectively in team settings and able to adapt to different work environments.

What is the DEGREE OPTION?

Bachelor of Science (B.S.) in Electrical Engineering

NOTE: There is also an option to earn the Master of Science in Engineering Technology degree.

What are the CONCENTRATIONS?

Students choose between one of three concentrations: **Electrical**, **Electric Power & Clean Energy**, and **Computer Engineering**.

Electrical: Building on core topics, electrical engineering focuses on the design and applications of electronic devices, analog and digital circuits and systems, and microprocessors.

Electric Power & Clean Energy: This concentration focuses on electrical



power and clean energy systems. Topics may include power systems, transmission and distribution systems, electromechanical energy conversion, power electronics, and power converters, with an emphasis on clean and sustainable energy resources and systems and their integration into electric power systems.

Computer Engineering: This concentration builds on core electrical engineering topics to focus on the design of digital components and devices, computer-based systems, networks, and services.

What is the UNDERGRADUATE ADMISSION PROCESS?

Any currently enrolled student at WCU may declare Electrical Engineering with a concentration as an undergraduate major. Please make an appointment with your advisor via your MyWCU student portal.

What JOBS ARE AVAILABLE?

Depending on the area of focus and other qualifications, students with

this degree often become electrical engineers and technicians, computer network engineers, electronics engineers and technicians, design engineers, software engineers, control and instrumentation engineers, project engineers, systems analysts, electrical product analysts, sales and testing engineers, prototyping and modeling technicians, broadcast engineers, hardware engineers, application engineers, and more.

NOTE: Advanced degrees may be required for some of the above careers. Please speak with an advisor or career counselor for more information.

Who employs ELECTRICAL ENGINEERING graduates?

Our graduates work in a variety of industries including aerospace, automotive, chemical, construction, defense, electronics, consumer goods, marine, and materials and metals industries. Graduates will often work for large corporations; federal, state, or local government contractors, educational institutions, hospitals, private businesses, and more.

MAJOR MAP

How to use this map: Review the four categories and suggestions of activities and when you should consider engaging in them. Remember, these are just suggestions! There is a fillable space for you to add in any other ideas you have to set yourself up for success in life after college.

Looking for a minor? Consider these options:

- | | | |
|---------------------------------|------------------|-------------|
| Accounting | Electric Power | Mathematics |
| Business Administration and Law | Entrepreneurship | Physics |
| Computer Information Systems | Management | |
| Construction Management | Marketing | |

1st YEAR

2nd YEAR

3rd YEAR

4th YEAR

EXCEL IN ACADEMICS

Coursework your first year will focus on foundational classes in math, physics, introductory Engineering topics, and liberal studies requirements. Check out the [8-semester plan](#) and make an appointment with your advisor.

The second year continues with more advanced math and physics courses, foundational Engineering classes, and liberal studies requirements. Check out the [8-semester plan](#) and make an appointment with your advisor.

Courses in your third year will focus heavily on upper-level EE courses and finishing liberal studies. Check out the [8-semester plan](#) and make an appointment with your advisor.

Courses in your final year will focus on upper-level Engineering and EE courses. Check out the [8-semester plan](#), make an appointment with your advisor, and complete your degree audit, and [apply for graduation!](#)

GET HANDS-ON EXPERIENCE

Check out [WCU's DegreePlus program](#) and choose which events in any of the four categories you want to attend. Categories include: Professionalism, Teamwork, Leadership, or Cultural Responsiveness.

See what on-campus employment opportunities are available by logging in to JobCat via your MyWCU.

Consider joining clubs or organizations related to your major or the student branch of national organizations such as the Society of Women Engineers (SWE) and the Institute of Electrical and Electronics Engineers (IEEE).

If you are thinking about attending a graduate school, start engaging in hands-on experiences required in graduate school admissions.

Engage deeper with [DegreePlus](#); choose an additional competency to complete

Complete an internship that will give you practical hands-on experience in your field. Contact the CCPD for help in your internship search.

Consider networking with professionals in your field. [IEEE](#) and the [Society of Manufacturing Engineers](#) has numerous networking events listed.

Investigate requirements for full-time jobs or graduate school admissions. Assess what skills or experiences you're lacking and invest time in seeking additional opportunities such as certification programs, classes, or professional development workshops during your last year to fill that gap. Connect with your faculty advisor or career counselor.

BE PART OF THE COMMUNITY

Connect with the [Center for Community Engagement and Service Learning](#) and ask about the [Spark Award](#), a program aimed to encourage and recognize students who are connected with their community.

Develop deeper relationships with the organizations for which you volunteer. Ask for special projects or responsibilities that you can highlight on a resume.

If you want to [study abroad](#), this is a good year to have that experience. The Study Abroad Office has excellent suggestions on places to go to study your major specifically. Options include faculty led ENGR 365, or a Global 3E consortium for engineering programs with exchanges.

Volunteer with nonprofits that focus on your ideal career path.

Connect with alumni in your field through [LinkedIn](#).

Join professional organizations such as the [National Society of Professional Engineers](#).

Network with employers and non-profits at the annual Career Fair Plus event, held each October and February.

PREPARE FOR LIFE AFTER COLLEGE

Further explore your career options or career interests using the [Center for Career and Professional Development's](#) online resources, [Focus 2](#), and [Onet Online](#).

Connect with a career counselor early on to explore opportunities and experiences you can do while in college to further develop your professional resume.

Check out [CCPD's list of career-building activities](#) and participate in an activity this year, such as attending Career Fair Plus.

Start a spreadsheet of graduate schools you wish to apply to in a few years; label your spreadsheet with each school's admission requirements and application materials so that you are aware of the expectations.

Visit the CCPD to hone your professional resume and cover letter (Make an appointment through MyWCU).

Utilize the [Writing and Learning Commons](#) for GRE, and other professional exam preparation sessions. Take the GRE, etc. Use [Big Interview](#) to learn more about professional interviews.

Schedule a visit to tour graduate schools of your choice, if applicable.

Apply to graduate schools, if applicable.

Look for and apply for jobs between 4 and 6 months before graduation.

Polish your resume, cover letter, and interview skills by visiting the [CCPD](#).

Internships are still the number-one educational experience employers look for in a recent college graduate resume. (Chronicle of Higher Education's study on 50,000 employers)

DID YOU KNOW?

MORE INFORMATION

INTERNSHIP Information

At Western Carolina University there are numerous internship opportunities for students. In some cases internships are established through a faculty member in the student's major. Oftentimes students find part-time jobs in an area related to their field of study. When this happens, students should discuss with their academic advisor the possibility of receiving college credit. Generally, three hours of general elective credit can be earned for a minimum of 200 hours of experience. Upon completion of this course, students will have gained experience in project-based work in the construction industry and will have learned how to:

- Apply engineering concepts to engineering projects
- Work in a project-team environment
- Meet deadlines and work under pressure
- Interface with the various different members of the engineering industry

SKILLS LEARNED in the classroom

The core competencies will center on developing skills, knowledge, and attitudes such as:

- signal processing
- controls
- communications
- quality control
- information handling and organization
- critical thinking skills
- problem solving
- teamwork

- leadership

KNOWLEDGE Base

This program will prepare students to:

- identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- communicate effectively with a range of audiences
- recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- acquire and apply new knowledge as needed, using appropriate learning strategies.

Professional RESOURCES

- Audio Engineering Society: aes.org
- Institute of Electrical and Electronics Engineers: ieee.org
- National Society of Professional Engineers: nspe.org
- Semiconductor Environmental Safety and Health Association: sesha.org

QUESTIONS?

For questions, please call the Electrical Engineering program at 828-227-2775 or visit set.wcu.edu.

To schedule an appointment with a career counselor, contact the Center for Career and Professional Development, 828-227-7133 or careerservices@wcu.edu.