What can I do with a degree in... ENGINEERING?

Why study **ENGINEERING?**

Students interested in making the world a better place and helping solve 21st century challenges in areas such as energy, new product design, advanced manufacturing, advanced mechatronics, and the environment, may choose to pursue a degree in engineering. The Bachelor of Science in Engineering (B.S.E.) program provides a foundation in mathematics, sciences, and engineering, augmented with engineering specializations.

What is the **DEGREE OPTION?**

Bachelor of Science (B.S.) in Engineering

NOTE: Western Carolina University also offers a Master of Science in Engineering Technology.

What are the **CONCENTRATIONS?**

Students choose between one of three concentrations: **Mechanical Engineering, Civil Engineering,** and **Robotics and Automation.**

Mechanical: The Mechanical concentration provides a foundation in mechanical and thermal systems providing the necessary training to design new products and the manufacturing equipment to produce them. Courses include computer programming, analysis of static and dynamic systems, computer aided engineering, energy & heat transfer, system dynamics and control, and machine design.

Civil: The civil concentration provides knowledge required to design engineering structures (buildings, bridges, and roads), manage water, control erosion, and to design transportation systems. Courses include computer programming, construction engineering, project management, geotechnics, environmental engineering, transportation, and water resources.

Robotics and Automation: The RAE concentration provides knowledge of mechanical systems, electrical systems, robotics, automation, and motion control. Many courses are shared with the mechanical engineering concentration and the electrical engineering program. This specialized concentration provides focused training for those interested in a career designing and/or programming robots and automated systems.

What is the **UNDERGRADUATE ADMISSION PROCESS?**

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

What **JOBS ARE AVAILABLE?**

Graduates are prepared for employment in a variety of different industries including aerospace, defense, agricultural, medical devices, commercial products, computers, commercial building, public works, nuclear and energy production, private engineering firms and businesses; federal, state, and local government; educational institutions; 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 **ENGINEERING** graduates?

Our graduates work for a variety of employers including large corporations such as General Electric, Eaton, Moog, Kubota, AT&T, Borg Warner, Boeing, and Goodyear; small and private engineering firms and businesses; federal, state, and local government contractors; educational institutions; 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.

	1st YEAR	2nd YEAR
EXCEL IN ACADEMICS	Coursework in your first year will focus on foundational classes within math, physics, and introductory engineering. Check out the **8-semester plan for your concentration** and make an appointment with your advisor. It is important to develop a solid foundation because future courses will build upon it.	The second year continues with additional liberal studies requirements as well as core engineering courses, project-based learning and topics related to your concentration. Check out the **8-semester plan for your concentration** and make an appointment with your advisor.
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 2.0.**	Consider joining clubs or organizations related to your major such as FEM in STEM or the student branch of the American Society of Mechanical Engineers (ASME), Institute of Electrical and Electronics Engineers (IEEE), etc. If you are thinking about attending graduate school, having undergraduate research experience can be helpful. Engage deeper with **DegreePlus;** choose an additional competency to complete.
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.
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.

Looking for a minor? Consider these options:

Computer Information Systems
Entrepreneurship
Management
Marketing
Mathematics
Physics

3rd YEAR	4th YEAR
Courses in your third year will focus heavily on upper-level Engineering courses and topics related to your concentration. Check out the **8-semester plan for your concentration** and make an appointment with your advisor.	Courses in your final year will continue to focus on upper-level Engineering and Capstone while finishing the liberal studies requirements. Check out the **8-semester plan for your concentration,** make an appointment with your advisor, and complete your degree audit, and **apply for graduation!**
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. **ASME**, **IEEE** and the **Society of Manufacturing Engineers** have 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.
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.
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 vising the **CCPD.**

DID YOU KNOW? 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)

MORE INFORMATION

INTERNSHIP Information

There are numerous internship opportunities for students. In some cases internships are established through a faculty member in the student's major. Part-time jobs in an area related to your field of study are sometimes available.

SKILLS LEARNED in the classroom

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

- technical problem solving
- computer programming
- engineering design
- analysis of systems
- product design and development
- computer-aided engineering
- critical thinking skills
- 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**

- American Society of Civil Engineers: asce.org
- American Society of Mechanical Engineer: asme.org
- Institute of Electrical and Electronics Engineers: ieee.org
- National Society of Professional Engineers: nspe.org

QUESTIONS?

For questions, please call the Engineering program at 828-227-2775 or visit engineering.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.

Western Carolina University