

WESTERN CAROLINA UNIVERSITY

B.S. ENGINEERING

ROBOTICS & AUTOMATION CONCENTRATION

The B.S. in Engineering with a concentration in Robotics and Automation provides students with knowledge of both mechanical and electrical systems. In addition, hands-on laboratories and specialized courses in robotics, automation, and motion control provide both knowledge and experience in this growing field. Graduates work in a wide variety of sectors including automotive, aerospace, medical, commercial products, and other industrial areas. This degree program is ABET accredited.

CAREER PATHS

Industries

- Automotive
- Aerospace/Defense
- Medical
- Commercial Products
- Computers/Gaming Platforms

Job Titles

- Design Engineer
- Automation Engineer
- Controls Engineer
- Manufacturing Engineer
- Project Engineer
- Systems Engineer

Income Data for Typical BSE-RAE Graduates

U.S. salary data collected from O*NET OnLine (2024)

- Early Career: \$62,800 to \$85,800
- Mid-career: \$117,800 to \$152,700



LABS

Engineering Design
Makerspace
Finite Element Analysis
Dynamics & Controls
Industrial Robots
Robotic Simulations

SENIOR CAPSTONE PROJECT

2-semester Project
Faculty & Industry Mentors
Partnership with Industries
Industry Sponsored

THE RAPID CENTER

Applied Experiences
Research & Development



B.S. ENGINEERING, ROBOTICS & AUTOMATION

WCU 8-Semester Plan - Fall 2025

YEAR 1

Fall		
Course #	Course Name	Hours
MATH 153	Calculus I (C2)	4
CHEM 139	General Chemistry I (C5)	4
ENGL 101	Writing and Rhetoric	3
Wellness (C4)		3
Perspective		3
	Total Hours	17

Spring		
Course #	Course Name	Hours
MATH 255	Calculus II	4
PHYS 230	General Physics I (C5)	4
ENGR 123	Engineering Programming	3
ENGR 199	Intro to Eng/Prac/Prin. I	3
COMM 201	Foundations of Communication (C3)	3
	Total Hours	17

YEAR 2

Fall		
Course #	Course Name	Hours
MATH 256	Calculus III	4
ENGR 201	Engineering Mechanics: Statics	3
ENGR 200	Eng/Prac/Prin. II	3
PHYS 231	General Physics II	4
ENGR 247	3D CAD Modeling	3
	Total Hours	17

Spring		
Course #	Course Name	Hours
MATH 320	Ordinary Differential Equations	3
ENGR 202	Mechanics of Materials	3
ME 301	Engineering Mechanics: Dynamics	3
ENGL 202	Writing and Critical Inquiry	3
Perspective		3
	Total Hours	15

YEAR 3

Fall		
Course #	Course Name	Hours
RAE 301	Mechatronics	3
ENGR 315	Electrical Engr. Fundamentals	3
ENGR 411	Engineering Numerical Analysis	3
MATH 370	Probability & Statistics	3
Perspective		3
	Total Hours	15

Spring		
Course #	Course Name	Hours
ENGR 350	Engr Prac & Principles III	3
RAE 320	Robotic Manufacturing	3
RAE 321	Robotic Manufacturing Lab	1
RAE 401	Robotics I: Design & Application	3
Perspective		3
Perspective		3
	Total Hours	16

YEAR 4

Fall		
Course #	Course Name	Hours
ENGR 400	Engineering Capstone I	3
ENGR 402	System Dynamics & Control	3
RAE 402	Robotics II: Integrated Systems	3
RAE 451	Motion Control Lab	1
Tech. Elective	(Advanced Engineering Topic)	3
ULP		3
	Total Hours	16

Spring		
Course #	Course Name	Hours
ENGR 450	Engineering Capstone II	3
EE 452	Electric Machines & Drives	3
RAE 440	Advanced Automation	3
RAE 441	Advanced Automation Lab	1
RAE 442	Modeling and Simulation	3
	Total Hours	13

Notes:

- Total for degree: 126 Credit Hours
- Minimum GPA in major: 2.30
- Upper Level Perspective (ULP): An approved ULP course is required at the 300-400 level in one of Liberal Studies Perspectives categories.
- This 8-semester plan should be used FOR REFERENCE ONLY. Students can find degree requirements via Degree Audit.