

Electronics Engineering - B.S.

The Electronics Engineering bachelor's degree program provides a broad-based foundation in current and projected growth areas of electronic engineering. The program focuses on the technology dynamics of the industry in embedded systems design and applications.

An immersive, lab-based approach integrates mathematical and engineering applications with contemporary developments in the field.

Upon completion of the program, graduates are expected to:

- Apply knowledge of mathematics, engineering sciences and contemporary developments in the field to perform analysis and design to desired engineering specifications.
- Use engineering processes to identify and analyze problems, formulate solutions, design simulations and experiments, and interpret results.
- Communicate complex concepts through design principles to create adaptable and efficient solutions that reflect ethical considerations and global awareness in the resolution of engineering problems.
- Employ industry-standard techniques, skills, and tools to analyze and interpret data to formulate engineering solutions.
- Integrate knowledge, tools, and problem - solving skills to implement the design, creation, and testing of solutions to engineering problems.

Through experiential education options, students have the opportunity to gain work experience at a variety of industry partnership sites.

Electronics Engineering

A four-year program leading to the bachelor of science degree

Engineering Foundations

ENGN1015	Introduction to Engineering	3
ENGN2001	Digital Logic Design	4
ENGN2009	C Programming for Engineering	4

Major Courses

ENGN2020	Transform Methods for Engineering	3
ENGN2085	Introduction to Embedded Systems	3
ENGN2101	Linear Circuit Theory	3
ENGN2102	Linear Circuit Theory Lab	1
ENGN2205	Microcontrollers	3
ENGN3005	Operational Amplifiers and Linear Circuits	3
ENGN3045	Electricity & Magnetism	3
ENGN3150	Solid State Devices	3
ENGN3151	Solid State Devices Lab	1
ENGN3180	Microelectronics Design	3
ENGN4030	Digital Signal Processing	3
ENGN4140	Capstone Design I	3
ENGN4145	Capstone Design II	3
IDES3100	Parametric Engineering Design	3

Applied/Experiential Learning

Choose 6 credits from the following: 6

DEE3999	Directed Experiential Education ^D
TECX4099	College of Engineering & Design Internship ^{lc}
TECX4190	Technical Solutions Design Project

Related Professional Studies

CAR0010	Career Management	1
FYS1020	First-Year Seminar	1
MATH2001	Statistics I	3
MATH2043	Ordinary Differential Equations	3
MATH2220	Linear Algebra	3
PHY2011 & PHY2016	Physics I and Physics I Laboratory	4

A&S Core Experience

Communications Foundation Courses		9
ENG1020	Rhetoric & Composition I	
ENG1021	Rhetoric & Composition II	
ENG1030	Communication Skills	
Integrative Learning		6
Two ILS courses, one at the 2000 level, and one at the 4000 level		
Arts and Humanities		6
PHIL3240	Ethics: A Global Perspective	
One course from ART, HIST, HUM, LIT, or REL		
Mathematics		6
MATH1040	Calculus I (or higher, based on student's placement) *	

MATH2040	Calculus II	
Science		4
CHM1000 & CHM1006	Foundations in Chemistry and Foundations in Chemistry Laboratory	
Social Sciences		6
Two courses from different disciplines: ANTH, ECON, GEND, LEAD, PSCI, PSYC, RES or SOC		
A&S Electives		7
MATH3040	Calculus III	
PHY2022 & PHY2026	Physics II and Physics II Laboratory	
Free Electives #		
9 credits selected from 1000-4999 numbered offerings within the university		9
Total Credits		123.0

* Students that do not place in MATH1040 Calculus I, will need to take an extra course(s), MATH1020 Fundamentals of Algebra, and/or MATH1030 Precalculus, as prerequisite(s). If needed one, or both, will count as a free elective(s).

^D Directed Experiential Education (DEE) opportunities are based on project availability with community partners and student eligibility. For more information, visit Experiential Education & Career Services (EE&CS).

^{lc}Typically, internships require a minimum of six credits. Students interested in a 9 or 12-credit internship can apply additional experiential learning and free elective credits, if available. Students are strongly encouraged to contact a faculty adviser before scheduling internship and free elective credits.

In addition to classes, free elective credits may be applied to a number of options such as internship, study abroad, Directed Experiential Education courses and courses in a specialization or minor as relevant. For Accelerated Master's program students, up to three graduate-level courses may apply. Students are strongly encouraged to contact a faculty advisor before scheduling free elective credits.

NOTE: Students must pass MATH0010 Pre-Algebra or have equivalent placement scores to enroll in required math course(s).

Note: Students must pass ENG0001 Writing Workshop or have equivalent placement scores to enroll in ILS 2000 level courses

In collaboration with academic colleges across all JWU campuses, JWU Global Study Abroad programs offer a variety of international options for major, minor, arts and sciences, and elective credit at many affordable price points for students during the academic year, break periods, and summer. Faculty-led, exchange, affiliate, and direct-enroll programs range in duration from one week to a full semester or full year. Financial aid may be applied and scholarships are available. Visit the study abroad website for information, program descriptions and online applications. Where will you go?

Program Educational Objectives

Three to five years after graduation from the B.S. in Electronics Engineering program:

- Electronics engineering graduates will have demonstrated their ability to use their engineering knowledge and skills to solve technical problems using engineering principles, tools and practices, in an ethical and responsible manner.
- Electronics engineering graduates are expected to demonstrate expertise in communications, teamwork, and leadership as members of diverse engineering teams in a global environment.
- Electronics engineering graduates are expected to engage in continuous professional development and to pursue life-long learning through education and professional organizations.