

# ELECTRICAL ENGINEERING BACHELOR OF SCIENCE

## Leading to the Bachelor of Science Degree in Electrical Engineering

The Bachelor of Science in Electrical Engineering program is accredited by the Engineering Accreditation Commission of ABET (<http://www.abet.org>).

Electrical engineers study, model, analyze, and design the electrical and electronic systems on which modern society relies. The curriculum includes a solid foundation in mathematics, science, and engineering principles. Students in this program take courses in analog and digital circuit design, electronics, electromagnetics, signal processing, communications, power systems, control systems, embedded computer systems, and engineering design. The curriculum incorporates both theory and practice in a learning environment that emphasizes hands-on experience and teamwork. Our graduates are well prepared for pursuing both an advanced degree and a professional career.

### Program Educational Objectives

After graduation, program graduates should demonstrate these abilities:

- Lifelong learning—Pursue professional development to meet and adapt to the emerging and evolving technology.
- Successful Careers—Enjoy a successful career in the field of electrical engineering or related fields.
- Professionalism—Graduates will contribute to their fields or professions.

### Student Outcomes

Students should demonstrate the following abilities upon graduation:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to 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.
3. An ability to communicate effectively with a range of audiences.
4. An ability to 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.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Total credits for degree: 135

This is a four-year program, starting in the fall semester of the student's first year and planned to end in the summer semester of the student's fourth year.

### Special Requirement for Graduation

In addition to the general graduation requirements of the Institute, specific graduation requirements from the Electrical Engineering (BSEE) program with a Bachelor of Science degree include maintaining a minimum cumulative grade point average of 2.0 for all technical courses. The courses used to determine the cumulative grade point average for all BSEE technical courses are courses with ELEC and ENGR prefixes. If another Wentworth course is substituted for one of these listed courses, the substitute course will be calculated into this cumulative grade point average for all technical courses.

Course	Title	Credits
<b>Freshman Year</b>		
<b>Fall Semester</b>		
ENGR1000	INTRODUCTION TO ENGINEERING	3
ENGR1800 or ENGR1600	PROGRAMMING WITH MATLAB or FUNDAMENTALS OF CAD & CAM	1
MATH1750	ENGINEERING CALCULUS I	4
PHYS1250	ENGINEERING PHYSICS I	4
English Sequence		4
Credits		16
<b>Spring Semester</b>		
ENGR1500	INTRODUCTION TO ENGINEERING DESIGN	3
ENGR1800 or ENGR1600	PROGRAMMING WITH MATLAB or FUNDAMENTALS OF CAD & CAM	1
MATH1850	ENGINEERING CALCULUS II	4
PHYS1750	ENGINEERING PHYSICS II	4
English Sequence		4
Credits		16
<b>Sophomore Year</b>		
<b>Fall Semester</b>		
ELEC2250	NETWORK THEORY I	4
ELEC2275	DIGITAL LOGIC	4
CHEM1100	GENERAL CHEMISTRY I	4
MATH2500	DIFFERENTIAL EQUATIONS	4
HSS Elective		4
Credits		20
<b>Spring Semester</b>		
ELEC2750	NETWORK THEORY II	4
ELEC2850	MICROCONTROLLERS USING C PROGRAMS	4
MATH2025	MULTIVARIABLE CALCULUS	4
HSS Elective		4
Credits		16
<b>Summer Semester</b>		
COOP3000	PRE CO-OP WORK TERM (OPTIONAL)	0
Credits		0
<b>Junior Year</b>		
<b>Fall Semester</b>		
ELEC3250	ANALOG CIRCUIT DESIGN	4
ELEC3600	SIGNALS AND SYSTEMS	4

Course	Title	Credits
MECH3599	ENGINEERING MECHANICS	4
	Elective Technical or EPIC	3
	HSS Elective	4
	Credits	19
<b>Spring Semester</b>		
COOP3500	COOP EDUCATION 1	0
	Credits	0
<b>Summer Semester</b>		
ELEC3150	OBJECT ORIENTED PROGRAMMING FOR ENGINEERS	4
ELEC3350	SOLID STATE DEVICES	3
ELEC4050	MOTORS AND CONTROLS	4
ELEC4475	FEEDBACK AND CONTROL	4
	Elective Technical or EPIC	3
	Credits	18
<b>Senior Year</b>		
<b>Fall Semester</b>		
COOP4500	COOP EDUCATION 2	0
	Credits	0
<b>Spring Semester</b>		
ENGR5000	ENGINEERING SENIOR DESIGN I	4
MGMT3200	ENGINEERING ECONOMY	3
MATH2100	PROBABILITY & STATISTICS FOR ENGINEERS	4
	HSS Elective	4
	Credits	15
<b>Summer Semester</b>		
ELEC4300	ENGINEERING COMMUNICATION SYSTEMS	4
ENGR5500	ENGINEERING SENIOR DESIGN II	4
ELMC3250	ELECTROMAGNETIC FIELD THEORY	3
	HSS Elective	4
	Credits	15
	Total Credits	135

**ENGL/HSS Note**

Full-time students are required to complete:

- At least one course in Humanities
- At least one course in the Social Sciences
- The remaining courses from either the Humanities or Social Sciences category.

Students with a three English course sequence may use the third English course to satisfy a Humanities requirement.

A minimum of 28 credits total, including English, humanities, and social science credit, is required to complete the humanities and social sciences graduation requirement.