

ELECTRICAL ENGINEERING (B.S.E.E.)

Required course work includes the university requirements (see regulation J-3 (<https://catalog.uidaho.edu/general-requirements-academic-procedures/j-general-requirements-baccalaureate-degrees/>)) and:

Code	Title	Hours
CHEM 111	General Chemistry I	3
CHEM 111L	General Chemistry I Laboratory	1
CS 120	Computer Science I	4
ECE 101	Foundations of Electrical and Computer Engineering	2
ECE 210	Electrical Circuits I	3
ECE 211	Electrical Circuits Lab I	1
ECE 212	Electrical Circuits II	3
ECE 213	Electrical Circuits II Lab	1
ECE 240	Digital Logic	3
ECE 241	Logic Circuit Lab	1
ECE 292	Sophomore Seminar	0
ECE 310	Microelectronics I	3
ECE 311	Microelectronics I Lab	1
ECE 320	Energy Systems I	3
ECE 321	Energy Systems I Laboratory	1
ECE 330	Electromagnetic Theory	3
ECE 331	Electromagnetics Laboratory	1
ECE 340	Microcontrollers	3
ECE 341	Microcontrollers Lab	1
ECE 350	Signals and Systems I	3
ECE 351	Signals and Systems I Lab	1
ECE 480	EE Senior Design I	3
ECE 481	EE Senior Design II	3
ECE 491	Senior Seminar	0
ENGR 210	Engineering Statics	3
ENGR 220	Engineering Dynamics	3
ENGR 360	Engineering Economy	2
ENGL 317	Technical Writing	3
MATH 170	Calculus I	4
MATH 175	Calculus II	4
MATH 275	Calculus III	3
MATH 310	Ordinary Differential Equations	3
MATH 330	Linear Algebra	3
PHIL 103 or AMST 301	Introduction to Ethics Studies in American Culture	3
PHYS 211	Engineering Physics I	3
PHYS 211L	Laboratory Physics I	1
PHYS 212	Engineering Physics II	3
PHYS 212L	Laboratory Physics II	1
STAT 301	Probability and Statistics	3
Select one of the following:		3-4
ECON 201	Principles of Macroeconomics	

ECON 202	Principles of Microeconomics	
ECON 272	Foundations of Economic Analysis	
Select one upper-division Engineering Science elective:		3
ENGR 320	Engineering Thermodynamics and Heat Transfer	
ENGR 335	Engineering Fluid Mechanics	
ENGR 350	Engineering Mechanics of Materials	
ENGR 428	Numerical Methods	
MATH 428	Numerical Methods	
PHYS 428	Numerical Methods	
Select 18 credits of Technical electives taken from upper-division Engineering, Math, Physics, Statistics, and Computer Science courses: ¹		18
ECE 410 or ECE 418	Microelectronics II Introduction to Electronic Packaging	
ECE 420	Energy Systems II	
ECE 430 or ECE 432 or ECE 434	Microwave and Millimeter Wave Circuits Propagation of Wireless Signals Antenna Principles and Design	
ECE 440 or ECE 443	Digital Systems Engineering Distributed Processing and Control Networks	
ECE 450	Signals and Systems II	
ECE 460 or ECE 465	Semiconductor Devices Introduction to Microelectronics Fabrication	
Total Hours		114-115

¹ Students may request, after approval by their academic advisor and the Petition Committee, to use other upper division technical courses in the College of Science or in Engineering Management (EM) in partial fulfillment of this requirement. Of these eighteen credits a minimum of twelve credits must be selected from electrical engineering courses including at least nine credits from these courses.

Courses to total 128 credits for this degree, not counting ENGL 101, MATH 143, and other courses that might be required to remove deficiencies.

Students majoring in electrical engineering must earn a grade of P in ECE 292 and a grade of C or better in each of the following courses for graduation and before registration is permitted in upper-division electrical and computer engineering courses:

Code	Title	Hours
CHEM 111	General Chemistry I	3
CS 120	Computer Science I	4
ECE 210	Electrical Circuits I	3
ECE 211	Electrical Circuits Lab I	1
ECE 212	Electrical Circuits II	3
ECE 213	Electrical Circuits II Lab	1
ECE 240 & ECE 241	Digital Logic and Logic Circuit Lab	4
ENGR 210	Engineering Statics	3
PHYS 211	Engineering Physics I	3
PHYS 212	Engineering Physics II	3

Students majoring in electrical engineering or computer engineering must meet the college requirements for admission to classes (see "Admission

to Classes (<https://catalog.uidaho.edu/colleges-related-units/engineering/>)" under College of Engineering (<https://catalog.uidaho.edu/colleges-related-units/engineering/>), part four).

Any student majoring in electrical engineering may accumulate no more than five (5) letter grades of D's and F's in mathematics, science, or engineering courses that are used to satisfy graduation requirements. Included in this number are multiple repeats of a single class or single repeats in multiple classes and courses transferred from other institutions. Specifically excluded are D or F grades from laboratory sections associated with courses.

Within the constraints on choice of technical electives noted above, students may choose sets of electives to develop proficiencies in certain areas of emphasis. Three such areas are currently available, one in communications, one in integrated circuit design, and one in power. The course requirements for each of these areas are described below.

Communications Emphasis

This emphasis prepares students for a variety of careers in the communications industry. Students should take a total of 18 credits from the following:

Code	Title	Hours
Core Courses		
Select 9 credits from the following:		9
ECE 410	Microelectronics II	
ECE 430	Microwave and Millimeter Wave Circuits	
ECE 450	Signals and Systems II	
Technical Electives		
Select 9 credits from the following:		9
ECE 413	Radio-Frequency IC Design	
ECE 432	Propagation of Wireless Signals	
ECE 445	Introduction to VLSI Design	
ECE 452	Communication Systems	
ECE 455	Information and Coding Theory	
Total Hours		27

Microelectronics Emphasis

This emphasis prepares students for variety careers in the semiconductor industry. It includes courses in analog/RF and mixed-signal integrated circuit (IC) design, semiconductors, and IC packaging. Students should take a total of 18 credits from the following:

Code	Title	Hours
Required credits:		
ECE 410	Microelectronics II	3
ECE 460	Semiconductor Devices	3
Select 3 core credits from the following:		3
ECE 413	Radio-Frequency IC Design	
ECE 415	Analog Integrated Circuit Design	
ECE 418	Introduction to Electronic Packaging	
Select 3 credits from the following:		3
ECE 440	Digital Systems Engineering	
ECE 430	Microwave and Millimeter Wave Circuits	
ECE 450	Signals and Systems II	
ECE 465	Introduction to Microelectronics Fabrication	

Select 6 additional credits of technical electives from the following:		6
ECE 413	Radio-Frequency IC Design	
ECE 415	Analog Integrated Circuit Design	
ECE 417	Mixed Signal IC Design	
ECE 418	Introduction to Electronic Packaging	
ECE 419	Image Sensors and Systems	
ECE 445	Introduction to VLSI Design	
ECE 462	Semiconductor Theory	
ECE 465	Introduction to Microelectronics Fabrication	
Total Hours		18

Power Emphasis

This emphasis prepares students for a variety of careers with electric utilities, consulting firms, and with manufacturing and design firms. Students should take a total of 18 credits from the following:

Code	Title	Hours
ECE 420	Energy Systems II	3
ECE 422	Power Systems Analysis	3
ECE 427	Power Electronics	3
ECE 450	Signals and Systems II	3
Select 3 credits from the following:		3
ECE 410	Microelectronics II	
ECE 430	Microwave and Millimeter Wave Circuits	
ECE 440	Digital Systems Engineering	
Select 3 additional credits of technical electives:		3
Total Hours		18

1. An ability to design and conduct experiments, as well as to analyze and interpret data.
2. An ability to design a system, component, or process to meet desired needs within realistic constraints.
3. An ability to identify, formulate, and solve engineering problems.
4. An ability to understand professional and ethical responsibility.
5. A knowledge of contemporary issues.
6. An ability to apply knowledge of mathematics, sciences, and engineering.
7. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
8. A broad knowledge in at least three, and introductory knowledge in all of the following areas of electrical engineering: electronics, power, electromagnetics, digital systems, signals, and systems