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

Required coursework 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 1111	General Chemistry I	3
CHEM 1111L	General Chemistry I Laboratory	1
CS 1120	Computer Science I	4
ECE 1010	Foundations of Electrical and Computer Engineering	2
ECE 2100	Electrical Circuits I	3
ECE 2110	Electrical Circuits Lab I	1
ECE 2120	Electrical Circuits II	3
ECE 2130	Electrical Circuits II Lab	1
ECE 2400	Digital Logic	3
ECE 2410	Logic Circuit Lab	1
ECE 2920	Sophomore Seminar	0
ECE 3100	Microelectronics I	3
ECE 3110	Microelectronics I Lab	1
ECE 3200	Energy Systems I	3
ECE 3210	Energy Systems I Laboratory	1
ECE 3300	Electromagnetic Theory	3
ECE 3310	Electromagnetics Laboratory	1
ECE 3400	Microcontrollers	3
ECE 3410	Microcontrollers Lab	1
ECE 3500	Signals and Systems I	3
ECE 3510	Signals and Systems I Lab	1
ECE 4800	EE Senior Design I	3
ECE 4810	EE Senior Design II	3
ECE 4910	Senior Seminar	0
ENGR 2100	Engineering Statics	3
ENGR 2200	Engineering Dynamics	3
ENGR 3600	Engineering Economy	2
MATH 1170	Calculus I	4
MATH 1750	Calculus II	4
MATH 2750	Calculus III	3
MATH 3100	Ordinary Differential Equations	3
MATH 3300	Linear Algebra	3
PHIL 1103	Introduction to Ethics	3
or AMST 3010	Studies in American Culture	
PHYS 2110	Engineering Physics I	3
PHYS 2110L	Laboratory Physics I	1
PHYS 2120	Engineering Physics II	3
PHYS 2120L	Laboratory Physics II	1
STAT 3010	Probability and Statistics	3
Select one of the following:		3-4
ECON 2201	Principles of Macroeconomics	
ECON 2202	Principles of Microeconomics	
ECON 2720	Foundations of Economic Analysis	
Select 18 credits of Technical electives taken from upper-division Engineering, Math, Physics, Statistics, and Computer Science courses: [1]		18
ECE 4100	Microelectronics II	
or ECE 4180	Introduction to Electronic Packaging	
ECE 4200	Energy Systems II	
ECE 4300	Microwave and Millimeter Wave Circuits	
or ECE 4320	Propagation of Wireless Signals	
or ECE 4340	Antenna Principles and Design	
ECE 4400	Digital Systems Engineering	
or ECE 4430	Distributed Processing and Control Networks	
ECE 4500	Signals and Systems II	
or ECE 4700	Control Systems	
ECE 4600	Semiconductor Devices	
or ECE 4650	Introduction to Microelectronics Fabrication	
Total Hours		**108-109**

[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 1101 , MATH 1143 , and other courses that might be required to remove deficiencies.

Students majoring in electrical engineering must earn a grade of P in ECE 2920 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 1111	General Chemistry I	3
CHEM 1111L	General Chemistry I Laboratory	1
CS 1120	Computer Science I	4
ECE 2100	Electrical Circuits I	3
ECE 2110	Electrical Circuits Lab I	1
ECE 2120	Electrical Circuits II	3
ECE 2130	Electrical Circuits II Lab	1
ECE 2400 & ECE 2410	Digital Logic and Logic Circuit Lab	4
ENGR 2100	Engineering Statics	3
ENGR 2200	Engineering Dynamics	3
MATH 1170	Calculus I	4
MATH 1750	Calculus II	4
MATH 2750	Calculus III	3
MATH 3100	Ordinary Differential Equations	3
PHYS 2110	Engineering Physics I	3
PHYS 2110L	Laboratory Physics I	1
PHYS 2120	Engineering Physics II	3
PHYS 2120L	Laboratory Physics II	1

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/)).

Any student majoring in electrical engineering may accumulate no more than five (5) letter grades of Ds and Fs 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 4100	Microelectronics II	
ECE 4300	Microwave and Millimeter Wave Circuits	
ECE 4500	Signals and Systems II	
Technical Electives		
Select 9 credits from the following:		9
ECE 4320	Propagation of Wireless Signals	
ECE 4450	Introduction to VLSI Design	
ECE 4520	Communication Systems	
ECE 4550	Information and Coding Theory	
Total Hours		**18**

Microelectronics Emphasis

This emphasis prepares students for a variety of 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 4100	Microelectronics II	3
ECE 4600	Semiconductor Devices	3
Select 3 core credits from the following:		3
ECE 4150	Analog Integrated Circuit Design	
ECE 4180	Introduction to Electronic Packaging	
Select 3 credits from the following:		3
ECE 4400	Digital Systems Engineering	
ECE 4300	Microwave and Millimeter Wave Circuits	
ECE 4500	Signals and Systems II	
ECE 4650	Introduction to Microelectronics Fabrication	
Select 6 additional credits of technical electives from the following:		6
ECE 4150	Analog Integrated Circuit Design	
ECE 4180	Introduction to Electronic Packaging	
ECE 4190	Image Sensors and Systems	
ECE 4450	Introduction to VLSI Design	
ECE 4620	Quantum Mechanics for Electrical Engineers	
ECE 4650	Introduction to Microelectronics Fabrication	
Total Hours		**18**

Power Emphasis

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

Code	Title	Hours
ECE 4200	Energy Systems II	3
ECE 4210	Introduction to Power Systems	3
ECE 4220	Power Systems Analysis	3
ECE 4270	Power Electronics	3
Select 3 credits from the following:		3
ECE 4100	Microelectronics II	
ECE 4300	Microwave and Millimeter Wave Circuits	
ECE 4400	Digital Systems Engineering	
ECE 4500	Signals and Systems II	
Select 3 additional credits of technical electives		3
Total Hours		**18**

Four-Year Plan

Fall Term 1		**Hours**
CS 1120	Computer Science I	4
ENGL 1101	Writing and Rhetoric I	3
MATH 1170	Calculus I	4
Humanistic and Artistic Ways of Knowing Course		3
Oral Communication Course		3
	Hours	**17**
Spring Term 1		
CHEM 1111	General Chemistry I	3
CHEM 1111L	General Chemistry I Laboratory	1
ECE 1010	Foundations of Electrical and Computer Engineering	2
MATH 1750	Calculus II	4
PHYS 2110	Engineering Physics I	3
PHYS 2110L	Laboratory Physics I	1
ENGL 1102	Writing and Rhetoric II	3
	Hours	**17**
Fall Term 2		
ECE 2100	Electrical Circuits I	3
ECE 2110	Electrical Circuits Lab I	1
ENGR 2100	Engineering Statics	3
MATH 3100	Ordinary Differential Equations	3
PHYS 2120	Engineering Physics II	3
PHYS 2120L	Laboratory Physics II	1
AMST 3010 or PHIL 1103	Studies in American Culture or Introduction to Ethics	3
	Hours	**17**
Spring Term 2		
ECE 2120	Electrical Circuits II	3
ECE 2130	Electrical Circuits II Lab	1
ECE 2400	Digital Logic	3
ECE 2410	Logic Circuit Lab	1
ECE 2920	Sophomore Seminar	0

ENGR 2200	Engineering Dynamics	3
MATH 2750	Calculus III	3
ECON 2201 or ECON 2202 or ECON 2720	Principles of Macroeconomics or Principles of Microeconomics or Foundations of Economic Analysis	3
	Hours	**17**
Fall Term 3		
ECE 3100	Microelectronics I	3
ECE 3110	Microelectronics I Lab	1
ECE 3200	Energy Systems I	3
ECE 3210	Energy Systems I Laboratory	1
ECE 3300	Electromagnetic Theory	3
ECE 3310	Electromagnetics Laboratory	1
ENGR 3600	Engineering Economy	2
American Diversity Course		3
	Hours	**17**
Spring Term 3		
ECE 3400	Microcontrollers	3
ECE 3410	Microcontrollers Lab	1
ECE 3500	Signals and Systems I	3
ECE 3510	Signals and Systems I Lab	1
MATH 3300	Linear Algebra	3
STAT 3010	Probability and Statistics	3
	Hours	**14**
Fall Term 4		
ECE 4800	EE Senior Design I	3
ECE 4910	Senior Seminar	0
UPDV Technical, Major Elective Course		3
International Course		3
Social and Behavioral Ways of Knowing Course		3
ECE 4100 OR ECE 4180 OR ECE 4200 OR ECE 4300 OR ECE 4320 OR ECE 4340 OR ECE 4400 OR ECE 4430 OR ECE 4500 OR ECE 4600 OR ECE 4650 OR ECE 4700		3
	Hours	**15**
Spring Term 4		
ECE 4810	EE Senior Design II	3
UPDV Technical, Major Elective Course		3
UPDV Technical, Major Elective Course		3
ECE 4100 OR ECE 4180 OR ECE 4200 OR ECE 4300 OR ECE 4320 OR ECE 4340 OR ECE 4400 OR ECE 4430 OR ECE 4500 OR ECE 4600 OR ECE 4650 OR ECE 4700		3
ECE 4100 OR ECE 4180 OR ECE 4200 OR ECE 4300 OR ECE 4320 OR ECE 4340 OR ECE 4400 OR ECE 4430 OR ECE 4500 OR ECE 4600 OR ECE 4650 OR ECE 4700		3
	Hours	**15**
	Total Hours	**129**

Five-Year Plan

Fall Term 1		**Hours**
ENGL 1101	Writing and Rhetoric I	3
MATH 1143	Precalculus I: Algebra	3
MATH 1144	Precalculus II: Trigonometry	1
CS 1112	Computational Thinking and Problem Solving	3
Humanistic and Artistic Ways of Knowing Course		3
	Hours	**13**
Spring Term 1		
CS 1120	Computer Science I	4
ECE 1010	Foundations of Electrical and Computer Engineering	2
ENGL 1102	Writing and Rhetoric II	3
MATH 1170	Calculus I	4
	Hours	**13**
Fall Term 2		
CHEM 1111	General Chemistry I	3
CHEM 1111L	General Chemistry I Laboratory	1
MATH 1750	Calculus II	4
MATH 3300	Linear Algebra	3
PHYS 2110	Engineering Physics I	3
PHYS 2110L	Laboratory Physics I	1
	Hours	**15**
Spring Term 2		
ECE 2100	Electrical Circuits I	3
ECE 2110	Electrical Circuits Lab I	1
ECE 2920	Sophomore Seminar	0
ENGR 2100	Engineering Statics	3
MATH 3100	Ordinary Differential Equations	3
PHYS 2120	Engineering Physics II	3
PHYS 2120L	Laboratory Physics II	1
	Hours	**14**
Fall Term 3		
ECE 2120	Electrical Circuits II	3
ECE 2130	Electrical Circuits II Lab	1
ECE 2400	Digital Logic	3
ECE 2410	Logic Circuit Lab	1
ENGR 2200	Engineering Dynamics	3
MATH 2750	Calculus III	3
	Hours	**14**
Spring Term 3		
ECE 3100	Microelectronics I	3
ECE 3110	Microelectronics I Lab	1
ECON 2201 or ECON 2202 or ECON 2720	Principles of Macroeconomics or Principles of Microeconomics or Foundations of Economic Analysis	3
STAT 3010	Probability and Statistics	3
Oral Communication Course		3
	Hours	**13**
Fall Term 4		
ECE 3200	Energy Systems I	3
ECE 3210	Energy Systems I Laboratory	1
ECE 3300	Electromagnetic Theory	3
ECE 3310	Electromagnetics Laboratory	1
ENGR 3600	Engineering Economy	2
AMST 3010 or PHIL 1103	Studies in American Culture or Introduction to Ethics	3
	Hours	**13**
Spring Term 4		
ECE 3400	Microcontrollers	3
ECE 3410	Microcontrollers Lab	1
ECE 3500	Signals and Systems I	3
ECE 3510	Signals and Systems I Lab	1
UPDV Technical, Major Elective Course		3
Social & Behavioral Ways of Knowing Course		3
	Hours	**14**
Fall Term 5		
ECE 4800	EE Senior Design I	3
ECE 4910	Senior Seminar	0
International Course		3
UPDV Technical, Major Elective Course		3
ECE 4100 OR ECE 4180 OR ECE 4200 OR ECE 4300 OR ECE 4320 OR ECE 4340 OR ECE 4400 OR ECE 4430 OR ECE 4500 OR ECE 4600 OR ECE 4650 OR ECE 4700		3
	Hours	**12**
Spring Term 5		
ECE 4810	EE Senior Design II	3
UPDV Technical, Major Elective Course		3
American Diversity Course		3
ECE 4100 OR ECE 4180 OR ECE 4200 OR ECE 4300 OR ECE 4320 OR ECE 4340 OR ECE 4400 OR ECE 4430 OR ECE 4500 OR ECE 4600 OR ECE 4650 OR ECE 4700		3

ECE 4100 OR ECE 4180 OR ECE 4200 OR ECE 4300 OR ECE 4320 OR ECE 4340 OR ECE 4400 OR ECE 4430 OR ECE 4500 OR ECE 4600 OR ECE 4650 OR ECE 4700	3
Hours	**15**
Total Hours	**136**

The degree map is a guide for the timely completion of your curricular requirements. Your academic advisor or department may be contacted for assistance in interpreting this map. This map is not reflective of your academic history or transcript, and it is not official notification of completion of degree or certificate requirements. Please contact the Registrar's Office regarding your official degree/certificate completion status.

The student will be able to:

1. identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

2. 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. communicate effectively with a range of audiences.

4. 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. function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

6. develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

7. acquire and apply new knowledge as needed, using appropriate learning strategies.