

ELECTRICAL ENGINEERING, B.S.E.

Learning Outcomes

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- 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.
- An ability to communicate effectively with a range of audiences.
- 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.
- 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.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Academic Standards

Program GPA

Program GPA requirement policies are described in the College of Engineering and Computing section of this bulletin. For the purpose of these policies, the following courses are used to determine the Program GPA for the Electrical Engineering B.S.E. program: all Lower Division Engineering courses, all Electrical Engineering Major courses, and all Career Plan Elective courses.

Admissions

Entrance Requirements

Admission requirements and processes for freshman, transfer students, and former students seeking readmission are managed by the Office of Undergraduate Admissions (http://sc.edu/about/offices_and_divisions/undergraduate_admissions/).

Transfer applicants from regionally accredited colleges and universities must have a cumulative 2.75 GPA on a 4.00 scale to enter the College of Engineering and Computing. In addition, transfer applicants for the Aerospace Engineering, Biomedical Engineering, Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, or Mechanical Engineering majors must also have completed a four semester-hour calculus course equivalent to MATH 141 with a grade of "C" or better.

Current University of South Carolina students who wish to enter the College of Engineering and Computing, and former students seeking readmission, must have an institutional GPA of 2.50 or better on at least 15 hours earned at UofSC. In addition, such applicants for the Aerospace Engineering, Biomedical Engineering, Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, or Mechanical Engineering majors must also have completed a four

semester-hour calculus course equivalent to MATH 141 with a grade of "C" or better.

Degree Requirements (126-139 hours)

See College of Engineering and Computing (<https://academicbulletins.sc.edu/undergraduate/engineering-computing/>) for progression requirements and special academic opportunities.

Program of Study

Requirements	Credit Hours
1. Carolina Core	34-46
2. College Requirements	0
3. Program Requirements	62-63
4. Major Requirements	30

Founding Documents Requirement

All undergraduate students must take a 3-credit course or its equivalent with a passing grade in the subject areas of History, Political Science, or African American Studies that covers the founding documents including the United State Constitution, the Declaration of Independence, the Emancipation Proclamation and one or more documents that are foundational to the African American Freedom struggle, and a minimum of five essays from the Federalist papers. This course may count as a requirement in any part of the program of study including the Carolina Core, the major, minor or cognate, or as a general elective. Courses that meet this requirement are listed here (<https://academicbulletins.sc.edu/undergraduate/founding-document-courses/>).

1. Carolina Core Requirements (34-46 hours)

CMW – Effective, Engaged, and Persuasive Communication: Written (6 hours)

Must be passed with a grade of C or higher.

- ENGL 101
- ENGL 102

ARP – Analytical Reasoning and Problem Solving (8 hours)

Must be passed with a grade of C or higher.

- MATH 141
- MATH 142

SCI – Scientific Literacy (8 hours)

Must be passed with a grade of C or higher.

- CHEM 111 & CHEM 111L
- PHYS 211 & PHYS 211L

GFL – Global Citizenship and Multicultural Understanding: Foreign Language (0-6 hours)

Score two or better on foreign language placement test; or complete the 109 and 110 courses in FREN, GERM, LATN or SPAN; or complete the 121 course in another foreign language.

- CC-GFL courses (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

GHS – Global Citizenship and Multicultural Understanding: Historical Thinking (3 hours)

- any CC-GHS course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

GSS – Global Citizenship and Multicultural Understanding: Social Sciences (3 hours)

- any CC-GSS course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

AIU – Aesthetic and Interpretive Understanding (3 hours)

- any CC-AIU course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

CMS – Effective, Engaged, and Persuasive Communication: Spoken Component ¹ (0-3 hours)

Select from the following:

- PHIL 325 (CMS/VSR overlay)
- any overlay or stand-alone CC-CMS course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

INF – Information Literacy ¹ (0-3 hours)

- any overlay or stand-alone CC-INF course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

VSR – Values, Ethics, and Social Responsibility ¹ (0-3 hours)

Select from the following:

- PHIL 325 (CMS/VSR overlay)
- any overlay or stand-alone CC-VSR course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

¹ Carolina Core Stand Alone or Overlay Eligible

Requirements – Overlay-approved courses offer students the option of meeting two Carolina Core components in a single course. A maximum of two overlays is allowed. The total Carolina Core credit hours for this program must add up to a minimum of 34 hours.

2. College Requirements (0 hours)

No college-required courses for this program.

3. Program Requirements (62-63 hours)

Supporting Courses (62-63 hours)

Course	Title	Credits
Analysis Course		
Select one of the following:		
CSCE 146	Algorithmic Design II	3-4
EMCH 201	Introduction to Applied Numerical Methods	
PHYS 306	Principles of Physics III	
Foundational Courses		
ECON 421	Engineering Economics	3
EMCH 220	Mechanical Engineering Fundamentals for Non-Majors	3

MATH 241	Vector Calculus (must be passed with a grade of C or higher)	3
MATH 242	Elementary Differential Equations (must be passed with a grade of C or higher)	3
PHYS 212	Essentials of Physics II (must be passed with a grade of C or higher)	3
PHYS 212L	Essentials of Physics II Lab (must be passed with a grade of C or higher)	1
STAT 509	Statistics for Engineers	3
Lower Division Engineering		
CSCE 145	Algorithmic Design I (must be passed with a grade of C or higher)	4
CSCE 211	Digital Logic Design (must be passed with a grade of C or higher)	3
CSCE 212	Introduction to Computer Architecture	3
ELCT 101	Electrical and Electronics Engineering	3
or ENCP 101	Introduction to Engineering I	
ELCT 102	Electrical Science	3
ELCT 201	Introductory Electrical Engineering Laboratory	3
ELCT 221	Circuits (must be passed with a grade of C or higher)	3
ELCT 222	Signals and Systems (must be passed with a grade of C or higher)	3
Career Plan Electives		
Select 15 hours of electives ¹		15
Total Credit Hours		62-63

¹ The student, in consultation with his or her advisor, will select 15 hours of electives that support the student's defined career plan. Career Plan Electives include ELCT 332 and all ELCT courses numbered 499 and higher. Up to 6 hours of non-ELCT courses may be used to satisfy Career Plan Electives with department approval; all must be at or above the 300-level.

4. Major Requirements (30 hours)

Course	Title	Credits
ELCT 301	Electronics Laboratory	3
ELCT 302	Real Time Systems Laboratory	3
ELCT 321	Digital Signal Processing	3
ELCT 331	Control Systems	3
ELCT 350	Computer Modeling of Electrical Systems	3
ELCT 361	Electromagnetics	3
ELCT 363	Introduction to Microelectronics	3
ELCT 371	Electronics	3
ELCT 403	Capstone Design Project I	3
ELCT 404	Capstone Design Project II	3
Total Credit Hours		30

Major Map

A major map is a layout of required courses in a given program of study, including critical courses and suggested course sequences to ensure a clear path to graduation.

Major maps are only a suggested or recommended sequence of courses required in a program of study. Please contact your academic advisor

for assistance in the application of specific coursework to a program of study and course selection and planning for upcoming semesters.

Electrical Engineering, B.S.E.