

ELECTRICAL ENGINEERING (B.S.)

Objectives

The Electrical Engineering is a diverse field dealing with all aspects of designing and operating electrical devices and systems based on our technological society. The Electrical Engineering curriculum includes for example electronics, energy conversion, power generation and distribution, computing, communications, and control systems.

Graduates of the Electrical Engineering program will be able to achieve the following three objectives:

1. Employed in the electrical engineering profession with potential for successful career advancement.
2. For those with an interest in earning advanced degrees, they will have completed or be pursuing advanced degrees.
3. Be informed and involved members of their communities as well as professional organizations and engaged in life-long learning.

Accreditation

The Undergraduate Program in Electrical Engineering is accredited by Engineering Accreditation Commission of the Board for Engineering and Technology (ABET), Inc. <https://www.abet.org>.

Notes: Students are required to take the Mathematics Placement Test to determine if they need to take any math courses before taking MATH 241 CALCULUS I WITH LABORATORY.

Major Requirements

Code	Title	Hours
MATH 241	CALCULUS I WITH LABORATORY	3
MATH 242	CALCULUS II WITH LABORATORY	3
MATH 243	CALCULUS III WITH LABORATORY	3
MATH 244	CALCULUS IV WITH LABORATORY	3
MATH 307	PROBLYT & STATISTICS/ENGINEERG	3
MATH 368	DIFFERENTIAL EQUATIONS	3
CHEM 141 & CHML 141	GENERAL CHEMISTRY I and GENERAL CHEMISTRY LAB	4
PHY 211 & PHYL 211	General Physics I and GENERAL PHYSICS LAB I	4
PHY 212 & PHYL 212	General Physics II and GENERAL PHYSICS LAB II	4
CSC 118	COMPUTER SCIENCE I	3
CSC 119	COMPUTER SCIENCE II	3
ECE 101	Introduction to Electrical and Computer Engineering	2
ECE 212 & ECEL 212	DIGITAL LOGIC and DIGITAL LOGIC LABORATORY	4
ECE 220 & ECEL 220	CIRCUIT THEORY and CIRCUITS LABORATORY	4
ECE 252	ENGINEERING ANALYSIS	3
CIV 355	ENGINEERING ECONOMY	3
ECE 312	COMPUTER ORGANIZATION & DESIGN	3
ECE 320	CIRCUIT THEORY II	3

ECE 330 & ECEL 330	ELECTRONICS and ELECTRONICS LABORATORY	4
ECE 331 & ECEL 331	ELECTRONICS II and ELECTRONICS II LABORATORY	4
ECE 335	SEMICONDUCTOR DEVICES	3
ECE 345	ELECTROMAGNETIC FIELDS	3
ECE 351	SIGNALS AND SYSTEMS	3
ECE 355	CONTROL SYSTEMS	3
ECE 360 & ECEL 360	EMBEDDED MICROPROCESSOR SYSTEM and MICROPROCESSOR LABORATORY	4
ECE 440	COMMUNICATION SYSTEMS	3
ECE 490	SENIOR DESIGN PROJECTS I	3
ECE 491	SENIOR DESIGN PROJECTS II	3

Total Hours 91

Electrical Engineering Electives:

Code	Title	Hours
ECE 412	COMPUTER ARCHITECTURE	3
ECE 430	DIGITAL VLSI DESIGN	3
ECE 431	Digital System Testing and Design for Testability	3
ECE 435	POWER ELECTRONICS	3
ECE 441	COMPUTER NETWORKS	3
ECE 451	DIGITAL SIGNAL PROCESSING	3
ECE 480	POWER SYSTEM ANALYSIS	3
ECE 481	ELECTRIC MACHINES	3
ECE 492	SPCL STDS N ELEC & COMPU ENGIN	3
ECE 493	SPCL TPCS N ELECTRL & COMPU EN	3

Other Courses require Chair's approval

Course	Title	Hours
Freshman		
Fall		
CSC 118	COMPUTER SCIENCE I	3
ECE 101	Introduction to Electrical and Computer Engineering	2
ENG 104 or ENG 103 or ENG 111	COMPOSITION I or English Composition I with Co-requisite Support or COMPOSITION & LITERATURE FOR L	3
MATH 241	CALCULUS I WITH LABORATORY	3
UNIV 100	UNIVERSITY SUCCESS	2
Pathway Option		3
Hours		16
Spring		
ENG 105 or ENG 112	COMPOSITION II or COMPOSITION	3
ECE 212 & ECEL 212	DIGITAL LOGIC and DIGITAL LOGIC LABORATORY	4
MATH 242	CALCULUS II WITH LABORATORY	3
PHY 211 & PHYL 211	General Physics I and GENERAL PHYSICS LAB I	4
Pathway Option		3
Hours		17
Sophomore		
Fall		
MATH 243	CALCULUS III WITH LABORATORY	3
PHY 212 & PHYL 212	General Physics II and GENERAL PHYSICS LAB II	4
CSC 119	COMPUTER SCIENCE II	3
CHEM 141 & CHML 141	GENERAL CHEMISTRY I and GENERAL CHEMISTRY LAB	4

2 Electrical Engineering (B.S.)

ECE 220 & ECEL 220	CIRCUIT THEORY and CIRCUITS LABORATORY	4
Hours		18
Spring		
MATH 244	CALCULUS IV WITH LABORATORY	3
ECE 312	COMPUTER ORGANIZATION & DESIGN	3
ECE 252	ENGINEERING ANALYSIS	3
ECE 330 & ECEL 330	ELECTRONICS and ELECTRONICS LABORATORY	4
UNIV 200	CIVIC ENGAGEMENT	1
Pathway Option		3
Hours		17
Junior		
Fall		
MATH 368	DIFFERENTIAL EQUATIONS	3
ECE 320	CIRCUIT THEORY II	3
ECE 351	SIGNALS AND SYSTEMS	3
ECE 335	SEMICONDUCTOR DEVICES	3
ECE 360 & ECEL 360	EMBEDDED MICROPROCESSOR SYSTEM and MICROPROCESSOR LABORATORY	4
Hours		16
Spring		
MATH 307	PROBLYT & STATISTICS/ENGINEERG	3
ECE 355	CONTROL SYSTEMS	3
ECE 331 & ECEL 331	ELECTRONICS II and ELECTRONICS II LABORATORY	4
CIV 355	ENGINEERING ECONOMY	3
Humanities & Fine Arts Option		3
Hours		16
Senior		
Fall		
ECE 490	SENIOR DESIGN PROJECTS I	3
ECE 440	COMMUNICATION SYSTEMS	3
Technical Elective I		3
Social & Behavioral Science Option		3
Hours		12
Spring		
ECE 491	SENIOR DESIGN PROJECTS II	3
ECE 345	ELECTROMAGNETIC FIELDS	3
Technical Elective II		3
Technical Elective III		3
Hours		12
Total Hours		124

Notes

- Candidates that transfer 12 or more hours of college credit are exempt from UNIV 100 UNIVERSITY SUCCESS; however, the student must take 2 hours of general electives to replace the UNIV course.
- Students are required to take the Mathematics Placement Test to determine if they need to take any math courses before taking MATH 241 CALCULUS I WITH LABORATORY (C).
- Online Graduation Clearance (**to be completed during the graduating semester only**).

Electrical Engineering Technical Electives

Code	Title	Hours
ECE 351	SIGNALS AND SYSTEMS	3
ECE 430	DIGITAL VLSI DESIGN	3
ECE 431	Digital System Testing and Design for Testability	3
ECE 435	POWER ELECTRONICS	3

ECE 441	COMPUTER NETWORKS	3
ECE 480	POWER SYSTEM ANALYSIS	3
ECE 481	ELECTRIC MACHINES	3
ECE 492	SPCL STDS N ELEC & COMPU ENGIN	3
ECE 493	SPCL TPCS N ELECTRL & COMPU EN	3

Student Learning Outcomes

Each student who graduates from the Undergraduate Program in Electrical Engineering will have:

1. An ability to identify, formulate, and solve complex electrical engineering problems by applying principles of electrical engineering, science, and mathematics
2. An ability to apply electrical 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 electrical engineering situations and make informed judgments, which must consider the impact of electrical 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 electrical engineering judgment to draw conclusions
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.