

# ELECTRICAL ENGINEERING, BS

## Introduction

Please click here (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-engineering-design-computing/electrical-engineering/>) to see Electrical Engineering department information.

## Program Objectives

The educational objectives of the electrical engineering undergraduate program are to produce graduates who, within a few years of graduation, will:

- Demonstrate professional advancement as productive practicing engineers who continuously develop their technical expertise, as demanded by the rapidly changing technologies.
- Attain enhanced and broadened knowledge via graduate education in either engineering or other fields such as science, mathematics, business, medicine, and law.

These objectives are consistent with the mission of the University of Colorado Denver, congruent with the goals of the College of Engineering, Design and Computing and reflective of the mission of the Department of Electrical Engineering.

## Program Delivery

- This is an on-campus program.

## Declaring This Major

- Click here (<http://catalog.ucdenver.edu/cu-denver/undergraduate/records-registration/registration/declare-change-major-minor/>) to go to information about declaring a major.

## General Requirements

To earn a degree, students must satisfy all requirements in each of the areas below, in addition to their individual major requirements.

- CU Denver General Graduation Requirements (<http://catalog.ucdenver.edu/cu-denver/undergraduate/graduation/general-graduation-requirements/>)
- CU Denver Core Curriculum (<http://catalog.ucdenver.edu/cu-denver/undergraduate/graduation-undergraduate-core-requirements/>)
- College of Engineering, Design and Computing Graduation Requirements (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-engineering-design-computing/#graduationrequirements>)
- Click here (<http://catalog.ucdenver.edu/cu-denver/undergraduate/academic-policies-procedures/>) for information about Academic Policies

## Program Requirements

1. The particular curriculum to be satisfied by each student is the one published in the catalog current at the time of the student's 30-hour senior checkout.

2. A graduation agreement should be requested by each student before completing registration for the student's last semester.
3. All electrical engineering students must satisfactorily complete ELEC 4309 Senior Design Project I and ELEC 4319 Senior Design Project II in consecutive semesters.
4. Students must maintain a minimum 2.0 GPA in all courses applying to major requirements.
5. Students must maintain a minimum 2.0 GPA in all ELEC courses attempted.

Code	Title	Hours
<b>Electrical Engineering</b>		
ENGR 1200	Fundamentals of Engineering Design Innovation	3
ELEC 1510	Digital Logic	3
ELEC 1520	Programming for Electrical Engineers	3
ELEC 2132	Circuit Analysis I	3
ELEC 2142	Circuit Analysis II	3
ELEC 2520	Embedded Systems	3
ELEC 2531	Logic Laboratory	1
ELEC 2651	Signal Processing	3
ELEC 3133	Electromagnetic Fields	3
ELEC 3164	Energy Systems	3
ELEC 3225	Electronics	4
ELEC 3316	Signals and Systems	3
ELEC 3520	Intelligent Systems: IoT & Cyber-Physical Systems	3
ELEC 3701	Machine Learning for Engineers	3
ELEC 3724	Energy Systems Laboratory	1
ELEC 3817	Engineering Probability and Statistics	3
ELEC 3900	Circuit Design and Fabrication Laboratory	3
ELEC 4309	Senior Design Project I <sup>1</sup>	3
ELEC 4319	Senior Design Project II <sup>1</sup>	3
ENGR 3400	Technology and Culture	3
<b>Professional Elective</b>		
Select one course <sup>2</sup>		3
<b>Other Courses</b>		
Select seventeen semester hours from the following lists. At least two laboratories with an associated lecture course must be completed.		17
<b>Control Systems</b>		
ELEC 4136	Control Systems Analysis	
ELEC 4276	Digital Control Systems	
ELEC 4406	Control Systems Laboratory	
ELEC 4466	Adaptive Control System Design	
<b>Micro-Electronics and VLSI</b>		
ELEC 4005	IC Design	
ELEC 4025	Device Electronics	
ELEC 4555	VLSI Circuit Simulation	
ELEC 5455	Computer Methods for Device Electronics	
<b>Communications</b>		
ELEC 4247	Communication Theory	
ELEC 4248	Digital Communication Systems	
<b>Fields, Waves and Optics</b>		
ELEC 4133	Advanced Electromagnetic Fields	
ELEC 4134	Introduction to Microwave Circuit Design	

ELEC 4333	Introduction to Computational Electromagnetics	
ELEC 4373	Optical Engineering	
ELEC 4423	Radio Frequency Laboratory	
<i>Computer Engineering and Embedded System Design</i>		
ELEC 4501	Microprocessor Based Design	
ELEC 4511	Hardware-Software Interface	
ELEC 4521	Microprocessor Laboratory	
ELEC 4561	Hardware-Software Lab	
ELEC 4678	Quantum Computing	
ELEC 4723	High Performance Computer Architecture	
<i>Energy and Power Systems</i>		
ELEC 4164	Electric Drive Systems	
ELEC 4170	Electric Drive Systems Laboratory	
ELEC 4174	Power Electronic Systems	
ELEC 4184	Power Systems Analysis	
ELEC 4444	Power Systems Laboratory	
ELEC 4474	Power Electronics Laboratory	
<b>Mathematics</b>		
MATH 1401	Calculus I	4
MATH 2411	Calculus II	4
MATH 2421	Calculus III	4
MATH 3191	Applied Linear Algebra	4-6
& MATH 3200	and Elementary Differential Equations	
or MATH 3195	Linear Algebra and Differential Equations	
<b>Science</b>		
ENGR 1130	Chemistry for Engineers	5
PHYS 2311	General Physics I: Calculus-Based	4
PHYS 2321	Intro Experimental Phys Lab I	1
PHYS 2331	General Physics II: Calculus-Based	4
PHYS 2341	Intro Experimental Phys Lab II (optional)	1
Total Hours		108-110

<sup>1</sup> Effective Spring 2020: Senior Design I will be offered only during fall semesters; Senior Design II will be offered only during spring semesters.

<sup>2</sup> Professional electives may be selected from an approved list of upper-division or graduate-level courses or cooperative education. The electrical engineering advisor must be consulted prior to the selection of these electives.

To review the Degree Map for this program, please visit our website (<https://www.ucdenver.edu/student/advising/undergraduate/degree-maps/cedc/>).