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/schools-colleges-departments/college-engineering-design-computing/#policiestext) 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/)
- 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/#graduationrequirementstext)
- 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, which is a fall-only course and ELEC 4319 Senior Design Project II, which is a spring-only course and these courses must be 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
Electrical Engineering		
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 (spring only beginning sp. 24)	3
ELEC 3701	Machine Learning for Engineers (spring only)	3
ELEC 3724	Energy Systems Laboratory	1
ELEC 3817	Engineering Probability and Statistics (fall only)	3
ELEC 3900	Circuit Design and Fabrication Laboratory (summer and fall)	3
ELEC 4309	Senior Design Project I (fall only) [1]	3
ELEC 4319	Senior Design Project II (spring only) [1]	3
ENGR 3400	Technology and Culture	3
Professional Elective		
Select one course [2]		3
Other Courses		
Select seventeen semester hours from the following lists. At least two laboratories with an associated lecture course must be completed.		17
ELEC 4840	Independent Study: ELEC	
Control Systems		
ELEC 4136	Control Systems Analysis	
ELEC 4276	Digital Control Systems	
ELEC 4406	Control Systems Laboratory	
ELEC 4466	Adaptive Control System Design	
Micro-Electronics and VLSI		
ELEC 4005	IC Design	
ELEC 4025	Device Electronics	
ELEC 4225	Advanced Electronics	
ELEC 4435	Advanced Electronics Laboratory	
ELEC 4555	VLSI Circuit Simulation	
ELEC 5005	IC Design	

ELEC 5025	Device Electronics	
ELEC 5455	Computer Methods for Device Electronics	
ELEC 5555	VLSI Circuit Simulation	
Communications		
ELEC 4247	Communication Theory	
ELEC 4248	Digital Communication Systems	
ELEC 4249	Wireless networking	
ELEC 4637	Digital Signal Processing	
ELEC 5220	Methods of Engineering Analysis	
ELEC 5248	Digital Communication Systems	
ELEC 5250	Information Inference and Learning Algorithms	
ELEC 5276	Digital Control Systems	
ELEC 5446	Introduction to Modern Control Theory	
ELEC 5466	Adaptive Control System Design	
ELEC 5476	Optimal Control Systems	
ELEC 5638	Digital Image Processing	
ELEC 5648	Blind Signal Processing	
Fields, Waves and Optics		
ELEC 4133	Advanced Electromagnetic Fields	
ELEC 4134	Introduction to Microwave Circuit Design	
ELEC 4333	Introduction to Computational Electromagnetics	
ELEC 4373	Optical Engineering	
ELEC 4375	Engineering Neuroscience	
ELEC 4423	Radio Frequency Laboratory	
ELEC 5033	Advanced Electromagnetic Fields	
ELEC 5133	Electromagnetic Radiation and Antenna	
ELEC 5333	Introduction to Computational Electromagnetics	
ELEC 5334	Advanced Computational Electromagnetics	
ELEC 5373	Optical Engineering	
ELEC 5375	Engineering Neuroscience	
ELEC 5423	Radio Frequency Laboratory	
ELEC 5433	Fundamentals and Applications of Plasmas	
Computer Engineering and Embedded System Design		
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	
ELEC 4727	Computer Vision & Image Processing Acceleration	
ELEC 4800	Special Topics	
ELEC 5501	Microprocessor-Based Design	
ELEC 5511	Hardware-Software Interface	
ELEC 5678	Quantum Computing	
ELEC 5723	High Performance Computer Architecture	
Energy and Power Systems		
ELEC 4164	Electric Machines and Drives	
ELEC 4170	Electric Machines and Drives Laboratory	
ELEC 4174	Power Electronic Systems	
ELEC 4184	Power Systems Analysis	
ELEC 4444	Power Systems Laboratory	
ELEC 4474	Power Electronics Laboratory	
ELEC 5164	Electric Machines and Drives	
ELEC 5174	Power Electronic Systems	
ELEC 5710	Advanced Electric Drive Systems	
ELEC 5184	Power Systems Analysis	
ELEC 5444	Power System Laboratory	
ELEC 5755	Renewable Energy Systems	
Mathematics		
MATH 1401	Calculus I	4
MATH 2411	Calculus II	4
MATH 2421	Calculus III	4
MATH 3191 & MATH 3200	Applied Linear Algebra and Elementary Differential Equations	4-6
or MATH 3195	Linear Algebra and Differential Equations	
Science		
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
Total Hours		**107-109**

[1] Effective Spring 2020: Senior Design I will be offered only during fall semesters; Senior Design II will be offered only during spring semesters.

[2] 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 (http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-engineering-design-computing/electrical-engineering/electrical-engineering-bs/cedc_bs_electrical_engineering.pdf).