ELECTRICAL ENGINEERING - MINOR

The minor in electrical engineering provides training in electrical engineering beyond the training usually received by science, mathematics and applied mathematics majors. It can also broaden the training of students majoring in other engineering fields to provide more depth in electrical engineering. The goal is to teach students the fundamentals of electrical engineering and introduce them to at least one of its many advanced application areas. Such skills are important to students who expect to participate in real world situations that increasingly involve electrical engineering applications.

Requirements

The electrical engineering minor requires a minimum of 18 credit hours.

A minor in electrical engineering can be earned in conjunction with any CU Boulder major, except for BS degrees in electrical engineering, electrical & computer engineering and integrated design engineering-electrical emphasis. The electrical engineering minor cannot be completed alongside any of the following minors: computer engineering and signals & systems engineering.

Prerequisites

Students must complete these courses with a C- or higher before declaring the minor:

- Calculus 1
- Calculus 2
- APPM 2360 Introduction to Differential Equations with Linear Algebra or MATH 2130 Introduction to Linear Algebra for Non-Mathematics Majors & MATH 3430 Ordinary Differential Equations

(Students who have completed all above course requirements are encouraged to apply for the minor. Additionally, students who have completed all but one of the above course requirements, with the last required course currently in-progress, are also eligible to apply for the minor.)

Grade Requirements

A minimum cumulative GPA of 2.000 is required in the courses used to satisfy the minor requirements. Each individual course that is counted toward this minor must be passed with a grade of D- or higher (note that a minimum grade of C- is required in all prerequisite courses).

Residency Requirements

At least 9 credit hours for the minor must be taken on the CU Boulder campus.

Required Courses and Credits

Code	Title	Credit Hours
Required Courses		
ECEN 2250	Introduction to Circuits and Electronics	3
or GEEN 3010	Circuits for Engineers	
or MCEN 3017	Circuits and Electronics for Mechanical Engineers	
or ECEN 3010	Circuits and Electronics for Mechanical Engineers	
ECEN 2260	Circuits as Systems	3
ECEN 2270	Electronics Design Lab	3
Emphasis Areas		
Complete 9 credits, chosen from the following:		9
ECEN 2350	Digital Logic	
ECEN 2360	Programming Digital Systems	
or CSCI 2400	Computer Systems	
ECEN 2370	Embedded Software Engineering	
ECEN 3170	Electromagnetic Energy Conversion 1	
ECEN 3250	Microelectronics	
ECEN 3300	Linear Systems	
or ECEN 3301	Biomedical Signals and Systems	
ECEN 3320	Semiconductor Devices	
ECEN 3400	Electromagnetic Fields and Waves	
ECEN 3410	Electromagnetic Waves and Transmission	
ECEN 3730	Practical Printed Circuit Board Design and Manufacture	
ECEN 3753	Real-Time Operating Systems	
or CSCI 3753	Design and Analysis of Operating Systems	
ECEN 4111	Engineering Applications in Biomedicine: Cardiovascular Devices and Systems	
ECEN 4121	Design of Implantable Medical Devices: Neuromodulation	
ECEN 4138	Control Systems Analysis	
ECEN 4242	Communication Theory	
ECEN 4341	Bioelectromagnetics	
ECEN 4395	Organic Electronic Materials and Devices	
ECEN 4517	Power Electronics and Photovoltaic Power Systems Laboratory	
ECEN 4555	Principles of Energy Systems and Devices	
ECEN 4606	Undergraduate Optics Laboratory	
ECEN 4616	Optoelectronic System Design	
ECEN 4632	Introduction to Digital Filtering	
ECEN 4634	Microwave and RF Laboratory	
ECEN 4638	Control Systems Laboratory	
ECEN 4752	Communication Laboratory	
ECEN 4797	Introduction to Power Electronics	
ECEN 4827	Analog IC Design	
ECEN 4925	Foundations of Quantum Hardware	
ASEN 3300	Aerospace Electronics and Communications	
BMEN 3030	Bioinstrumentation	
Total Credit Hours		**18**