

Electrical engineering

Did You Know?

Department Chair Michael Lightner is past president (2006) of the Institute for Electrical and Electronics Engineers, the world's largest technical professional society with more than 360,000 members.

Students in department:

EEEN: 153 undergraduates

EEEN: 248 grad students

ECEN: 179 undergraduates

Faculty:

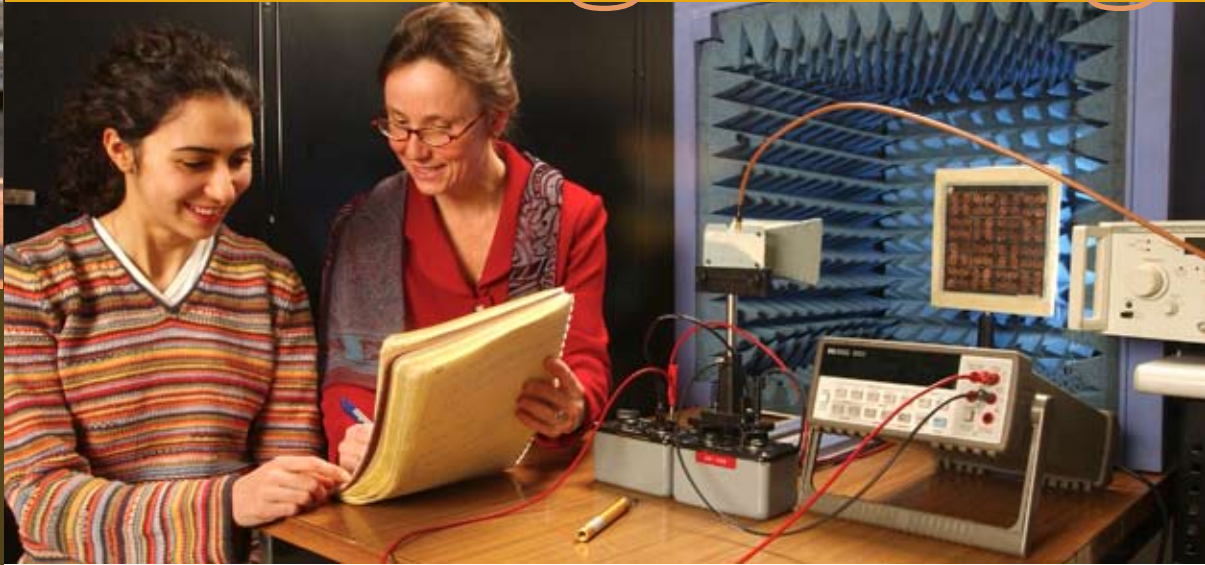
40 faculty

Research:

10 major areas of research
\$7.8 million in research funds (2006-07)

Rankings:

CU-Boulder is the only doctoral university in the Rocky Mountain region ranked in the top 20 public engineering programs in the nation. The graduate program in electrical engineering is 23rd among public institutions (USNWR).

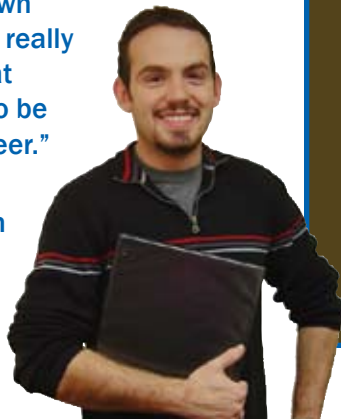


It's difficult to find an industry where electrical engineers do not play a role. From consumer technologies such as cell phones and MP3 players to industrial technologies such as aerospace guidance systems, robotics, medical instruments, and power distribution, electrical engineers are involved in the design and improvement of electrical and electronic systems, devices, and instruments.

At CU-Boulder, electrical engineering students receive a solid foundation in the fundamentals of the field, and then specialize their major through elective courses related to their particular interests. Areas of specialization include electromagnetics and wave propagation, opto-electronics, digital signal processing and communications, power electronics, solid-state materials and devices, controls, and computer engineering.

"The extensive hands-on experience and a caring faculty here at CU have shown me that I really have what it takes to be an engineer."

— Adam Bierman



Fifty percent of ECE undergraduates work in internships and co-op jobs in industry during an academic semester or over the summer.

Hands-on Learning

At CU, students learn by doing. Electrical engineering undergraduates gain hands-on experience through extensive laboratory components within the curriculum as well as undergraduate research projects, Space Grant projects, service outreach projects such as Engineers without Borders, Earn-Learn apprenticeships, internships, and co-op positions in industry.

A degree in electrical engineering prepares students for careers in:

- wireless communication
- renewable energy
- aerospace
- semiconductors
- biomedical engineering
- nanotechnology

Electrical curriculum

128 semester credit hours required

(Sample Curriculum)

(The freshman and sophomore years are identical for the Electrical Engineering and the Electrical and Computer Engineering curricula. Starting with the junior year, electrical engineering majors are able to take a variety of elective courses that reflect their individual interests. ECEN courses listed with 5 credit hours are courses with three hours per week of lecture and four hours per week of laboratory.)

FRESHMAN YEAR

Fall Semester

APPM 1350 Calculus 1 for Engineers	4
CSCI 1300 Computer Science I: Programming	4
ECEN 1100 Freshman Seminar	1
PHYS 1110 General Physics 1	4
Humanities and Social Science Elective	3

Spring Semester

APPM 1360 Calculus 2 for Engineers	4
CHEN 1211 General Chemistry for Engineers	3
CHEM 1221 General Chemistry Lab	2
Freshman Elective (see below)	3
Humanities and Social Science Elective	3

SOPHOMORE YEAR

Fall Semester

APPM 2360 Diff Eq with Linear Algebra	4
ECEN 2250 Circuits/Electronics	5
ECEN 2120 Computers as Components	5
Humanities and Social Science Elective	3

Spring Semester

APPM 2350 Calculus 3 for Engineers	4
ECEN 2260 Circuits/Electronics 2	5
ECEN 3100 Digital Logic	5
Humanities and Social Science Elective	3

JUNIOR YEAR

Fall Semester

ECEN 3300 Linear Systems	5
ECEN 3400 Electromagnetic Fields & Waves	5
ECEN 3810 Intro. to Probability	3
Free Elective	2

Spring Semester

ECEN 3250 Circuits/Electronics 3	5
EE Elective (see below)	3
PHYS 2130 General Physics 3	3
WRTG 3030 Writing on Science & Society	3
Free Elective	3

SENIOR YEAR

Fall Semester

EE Elective (see below)	3
2 senior-level theory courses	6
1 senior-level lab ECEN course	2
Technical Elective	3
Humanities & Social Science Elective	3

Spring Semester

1 senior-level ECEN theory course	3
ECEN 4610 Capstone Lab	3
1 senior-level ECEN lab course	2
Humanities & Social Science Elective	3
Technical Elective	3

EE Electives (choose 2)

ECEN 3170 Energy Conversion	3
ECEN 3320 Semiconductor Devices	3
ECEN 3410 EM Waves & Transmission	3

Freshman Electives (choose 1)

ECEN 1400 Intro to Digital and Analog Electronics	3
General Biology 1 plus lab (EPOB or MCDB)	4
Freshman projects course	3

For more information visit <http://ece-www.colorado.edu>

Undergraduates can join ECE faculty doing cutting edge research in the areas of:

Nanotechnology and nanomaterials

Renewable energy and energy systems

Optics, optoelectronics, and photonics

Controls and robotics

Electromagnetics, RF, and microwaves

Analog electronics and power electronics

Computer engineering

Communication, signal, and image processing

Geoscience and remote sensing

Biomedical and bioengineering

