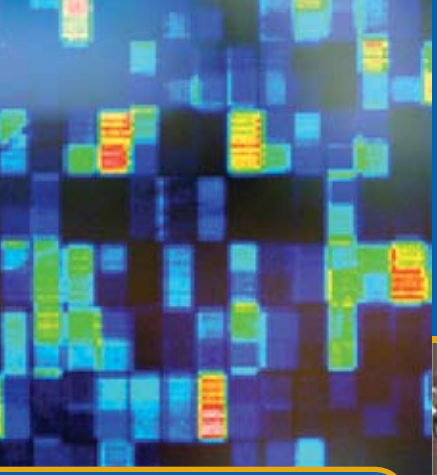


Chemical & Biological engineering

Did You Know?

ChBE Professor Kristi Anseth received the National Science Foundation's highest award for her pioneering research in tissue engineering that one day may lead to replacement body parts.

Students in department:
CBEN: 89 undergraduates
CHEN: 278 undergraduates
CHEN: 91 grad students

Faculty:
23 faculty

Research:
4 interdisciplinary research centers
$8.7 million in research awards (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 chemical engineering is ranked 10th in the nation among public universities (USNWR).

In chemical and biological engineering, concepts from the biological sciences are used to inspire and guide the development and production of chemicals, pharmaceuticals, and advanced materials. Exploring the structure of protein molecules, the functioning of cells, and the growth and regeneration of tissues are new frontiers in chemical and biological engineering. These lead to the development of exciting new approaches for drug delivery, biomaterial design, regenerative medicine, and medical devices.

The University of Colorado at Boulder's chemical and biological engineering undergraduate program emphasizes open-ended problems, computer applications, and undergraduate research. The program is characterized by a high degree of faculty-student interactions, both inside and outside the classroom.

"With a degree in chemical and biological engineering I can pretty much do anything I want, from medicine to petroleum to research to management."

— James Prager

Hands-on Learning

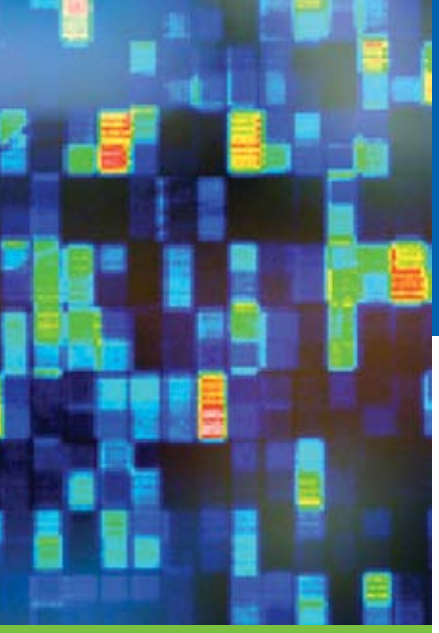
At CU, students learn by doing. In the Department of Chemical and Biological Engineering, more than half of undergraduate students participate in research in biotechnology, biomedical and tissue engineering, and pharmaceutical engineering. The department also features a well-established co-op program, which allows students to gain professional experience and often leads to job offers.

About 10 percent of the CBEN department's graduates go on to medical school. Another 10 percent go to graduate school for advanced degrees that lead to careers in research and development.

A degree in chemical and biological engineering prepares students for careers in:

- biotechnology
- pharmaceuticals
- medicine
- environment
- materials
- chemicals
- food and consumer products

Colorado
University of Colorado at Boulder



Chemical & Biological curriculum

128 semester credit hours required

(Sample Curriculum)

There are two curricula for the B.S. degree in Chemical and Biological Engineering. These are:

- Standard curriculum (sample presented below)
- Pre-medicine curriculum

FRESHMAN YEAR	CREDITS
Fall Semester	15
APPM 1350 Calculus 1 for Engineers	4
CHEN 1211 Engr. General Chemistry	3
CHEM 1221 Engr. General Chemistry Lab	2
GEEN 1300 Intro to Engr Computing	3
Humanities and Social Science Elective	3
Spring Semester	15
APPM 1360 Calculus 2 for Engineers	4
PHYS 1110 General Physics 1	4
CHEN 1300 Intro to Chemical Engr	1
CHEN 2810 Biology for Engineers	3
Humanities and Social Science Elective	3

SOPHOMORE YEAR	
Fall Semester	15
APPM 2350 Calculus 3 for Engineers	4
CHEM 3311 Organic Chemistry 1	4
CHEM 3321 Organic Chemistry Lab	1
CHEN 2120 ChE Material & Energy Bal	3
CHEN 2820 Foundations of Bioengineering	3
Spring Semester	18
APPM 2360 Diff Eq with Linear Algebra	4
PHYS 1120 General Physics 2	4
CHEN 3200 ChE Fluid Mechanics	3
CHEM 4521 Physical Chemistry for Engrs	3
MCDB 2150 Genetics	3
MCDB 2151 Genetics Lab	1

JUNIOR YEAR	CREDITS
Fall Semester	18
CHEN 3010 Applied Data Analysis	3
CHEN 3210 ChE Heat Transfer	3
CHEN 3320 ChE Thermodynamics	3
WRTG 3030 Writing on Science & Society	3
CHEM 3331 Organic Chemistry 2	4
CHEM 3341 Organic Chemistry 2 Lab	1
PHYS 1140 Experimental Physics	1
Spring Semester	17
CHEN 4330 Biokinetics	3
CHEM 4711 Biochemistry 1	3
CHEN 3130 ChE Laboratory 1	2
CHEN 3220 BioChemical Separations	3
CHEN 4805 Biomaterials	3
Humanities & Social Science Elective	3

SENIOR YEAR	
Fall Semester	15
CHEN 4090 Undergraduate Seminar	1
CHEN 4130 ChBE Laboratory 2	2
CHEN 4520 Chem Process Synthesis	3
CHEN 4800 Bioprocess Engineering	3
Free Elective	3
Humanities & Social Science Elective (3000+)	3
Spring Semester	15
CHEN 4530 Design Project	2
CHEN 4570 Instrumentation & Process Control	4
CHEN 4801 Pharmaceutical Biotech	3
Humanities & Social Science Elective (3000+)	3
Elective	3

For more information visit www.colorado.edu/che

Chemical and biological engineering students can work with faculty on research including:

- Biomaterials
- Tissue Engineering
- Metabolic Engineering
- Drug Delivery
- Dental Materials
- Biotechnology
- Biofuels and Biorefining
- Biofluidics
- Bioprocess Engineering

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