

Chemical engineering

Did You Know?

Chemical engineering faculty and students are studying ways to generate hydrogen, a clean burning alternative to fossil fuels, by splitting water in a solar reactor.

Students in department:

CHEN: 278 undergraduates

CHEN: 91 grad students

CBEN: 89 undergraduates

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).

Colorado
University of Colorado at Boulder



The advance of modern technology depends on the production of specialized chemicals and materials based on them, economically and with minimal adverse impact on the environment. This essential and exciting activity is what chemical engineering is all about. Industries that depend on chemical engineers include petroleum and chemical processing, pharmaceutical manufacturing, food and beverage processing, textiles, and microelectronics. 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, biomaterials design, regenerative medicine, and medical devices.

CU-Boulder's chemical 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.

Hands-on Learning

At CU, students learn by doing. More than half of undergraduate chemical engineering students participate in research opportunities in biotechnology, biomedical and tissue engineering, and emerging energy systems such as solar-driven hydrogen production and nanotechnology. Students also gain hands-on experience through industry co-op positions, which often lead to jobs after graduation.

A degree in chemical engineering prepares students for careers in:

- consumer products
- petrochemicals
- semiconductors
- medicine
- environment
- materials
- energy and fuels

"The faculty at CU does some pretty ground-breaking research. It's pretty cool as a student to be at a school and know this is the only place in the world where this kind of work is being done."

— Beau Hoffman



Chemical curriculum

128 semester credit hours required
(Sample Curriculum)

FRESHMAN YEAR	CREDITS	JUNIOR YEAR	CREDITS
Fall Semester	15	Fall Semester	16
APPM 1350 Calculus 1 for Engineers	4	CHEN 3010 Applied Data Analysis	3
CHEN 1211 Engr General Chemistry	3	CHEN 3210 ChE Heat Transfer	3
CHEM 1221 Engr General Chemistry Lab	2	CHEN 3320 ChE Thermodynamics	3
GEEN 1300 Intro to Engr Computing	3	WRTG 3030 Writing on Science & Society	3
Humanities and Social Science Elective	3	Elective	4
Spring Semester	15	Spring Semester	17
APPM 1360 Calculus 2 for Engineers	4	CHEM 4330 ChE Reaction Kinetics	3
PHYS 1110 General Physics 1	4	CHEN 3130 ChE Laboratory 1	2
CHEN 1300 Intro to Chemical Engr	1	CHEN 3220 ChE Separations & Mass Transfer	3
CHEN 2810 Biology for Engineers	3	Adv. Chemistry Elective	3
Humanities and Social Science Elective	3	Elective	3
SOPHOMORE YEAR		Humanities/Social Science Elective (3000+)	3
Fall Semester	17	SENIOR YEAR	
APPM 2350 Calculus 3 for Engineers	4	Fall Semester	15
CHEM 3311 Organic Chemistry 1	4	CHEN 4090 Undergraduate Seminar	1
CHEM 3321 Organic Chemistry Lab	1	CHEN 4130 ChE Laboratory 2	2
CHEN 2120 ChE Material & Energy Bal	3	CHEN 4520 Chem Process Synthesis	3
PHYS 1120 General Physics 2	4	Humanities/Social Science Elective (3000+)	3
PHYS 1140 Experimental Physics	1	Elective	6
Spring Semester	18	Spring Semester	15
APPM 2360 Diff Eq with Linear Algebra	4	CHEN 4530 Design Project	2
CHEM 3331 Organic Chemistry 2	4	CHEN 4570 Instrumentation & Process Control	4
CHEM 3341 Organic Chemistry 2 Lab	1	CHEN 4440 ChE Materials	3
CHEN 3200 ChE Fluid Mechanics	3	Elective	6
CHEN 4521 Physical Chemistry for Engrs	3		
Humanities and Social Science Elective	3		

Chemical Engineering curricula options

- Standard curriculum
(presented at right)
- Bioengineering option
- Computer option
- Energy option
- Environmental option
- Materials option
- Pre-medicine curriculum
- Co-operative education
program

The standard curriculum provides the most freedom in choosing elective courses. The option curricula use the technical electives to fulfill the theme option. Students completing one of the options receive a certificate from the department in addition to the University diploma. Details may be obtained from the ChBE Help Guide at <http://www.colorado.edu/che/undergrad/helpguide.html>

For more information visit www.colorado.edu/che

