



## FRCC (all campuses) to CU-Boulder Transfer Advising Guide for Chemical & Biological Engineering (B.S.)

[Chemical & Biological Engineering Department Website](#)

### Program Overview:

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. Efficient, economical manufacture of these items requires engineers who are well versed not only in chemical engineering but also in the fundamentals of biology.

**Admission Requirements:** [Please see this website for more information regarding CU Engineering admission criteria](#)

**FRCC Course Summary:** (the following courses will apply directly to the degree)

\***BOLD** denotes admission requirement courses

\*\*denotes recommended requirement before transferring

#### Mathematics:

<b>MAT 2410*</b>	<b>Calculus 1</b>	<b>(5 credits)</b>
<b>MAT 2420*</b>	<b>Calculus 2</b>	<b>(5 credits)</b>
MAT 2431	Calculus 3 with Engineering Applications	(5 credits)
MAT 2562	Differential Equations/Linear Algebra	(4 credits)

#### Science:

<b>CHE 1111*</b>	<b>General Chemistry 1</b>	<b>(5 credits)</b>
<b>CHE 1112**</b>	<b>General Chemistry 2</b>	<b>(5 credits)</b>
PHY 2111	Calc-based Physics 1	(5 credits)
PHY 2112	Calc-based Physics 2	(5 credits)

\*\*It is recommended for this major that you complete CHE 1111+1112 before transferring

#### Additional Science/Engineering Courses:

EKG 1000	Introduction to Engineering	(1 credit – free elective)
BIO 1111	General College Biology 1	(5 credits)
BIO 1112	General College Biology 2	(5 credits)
^BIO 1111+1112 = CHEN 2810 (Biology for Engineers) at CU Boulder		
CHE 2111	Organic Chemistry 1	(5 credits)
CHE 2112	Organic Chemistry 2	(5 credits)

#### Humanities and Social Sciences (H/SS):

- Up to nine (9) credit hours at the lower division (1000-2000) level
  - Six (6) credit hours the upper-division level – typically taken at CU Boulder
- Please consult our [CCCS humanities and social science list](#) when selecting these classes

# Suggested Five-Year Course Plan for Chemical & Biological Engineering

This is a suggested guide of coursework only and is subject to change. Always consult with your academic advisor for graduation planning purposes.

\*denotes courses that do not apply directly to degree, other than as free electives

## Front Range Community College (two years)

### Fall Semester 1

Course	Course Title	Credits
MAT 1440	Pre-Calculus*	5
EGG 1000	Intro to Engineering*	1
	<a href="#">Humanities/Social Science</a>	3
BIO 1111	General College Biology 1	5
	<b>Total Credits</b>	<b>14</b>

### Spring Semester 1

Course	Course Title	Credits
MAT 2410	Calculus 1	5
CHE 1111	College Chemistry 1 (with lab)	5
	<a href="#">Humanities/Social Science</a>	3
	<b>Total Credits</b>	<b>13</b>

### Fall Semester 2

Course	Course Title	Credits
MAT 2420	Calculus 2	5
CHE 1112	College Chemistry 2 (with lab)	5
BIO 1112	General College Biology 2	5
	<b>Total Credits</b>	<b>15</b>

### Spring Semester 2

Course	Course Title	Credits
MAT 2431	Calculus 3 (Engr. Applications)	5
PHY 2111	Physics 1	5
CHE 2111	Organic Chemistry 1	5
	<b>Total Credits</b>	<b>15</b>

## CU-Boulder (last three years)

### Fall Semester 3

Course	Course Title	Credits
APPM 2360	Differential Eq./Lin. Algebra	4
PHYS 1120	Physics 2	4
PHYS 1140	Experimental Physics	1
CHEN 2120	Material & Energy Balances	3
CHEN 1310	Intro to Engr. Computing	3
	<b>Total Credits</b>	<b>15</b>

### Spring Semester 3

Course	Course Title	Credits
	<a href="#">Humanities/Social Science</a>	3
CHEM 3331	Organic Chemistry 2	4
CHEM 3341	Organic Chemistry 2 Lab	1
CHEN 4521	Physical Chem for Engr.	3
CHEN 3200	Fluid Mechanics	3
	<b>Total Credits</b>	<b>14</b>

## CU-Boulder (last three years)...continued

### Fall Semester 4

Course	Course Title	Credits
CHEN 3010	Applied Data Analysis	3
CHEN 3210	ChE Heat Transfer	3
CHEN 3320	ChE Thermodynamics	3
	Engineering Writing Course	3
	<b>Total Credits</b>	<b>12</b>

### Spring Semester 4

Course	Course Title	Credits
CHEM 4611	Survey of Biochemistry	3
CHEN 4090	ChE Seminar	1
CHEN 3220	Separations & Mass Transfer	3
CHEN 4805	Biomaterials	3
CHEN 4830	Biokinetics	3
	<a href="#">UD Humanities/Social Science</a>	3
	<b>Total Credits</b>	<b>16</b>

### Fall Semester 5

Course	Course Title	Credits
CHEN 4810	Biological Engr. Lab	2
CHEN 4520	Design 1	3
CHEN 4820	Biochemical Separations	3
	Technical Elective	3
	Technical Elective	3
	<b>Total Credits</b>	<b>14</b>

### Spring Semester 5

Course	Course Title	Credits
CHEN 4530	Design 2	2
CHEN 4570	Process Control	4
	Focus Technical Elective	3
	Technical Elective	3
	<a href="#">UD Humanities/Social Science</a>	3
	<b>Total Credits</b>	<b>15</b>