



## 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

NOTE: Some courses may only be taught at the Boulder County campus. Please check with FRCC advisors.

#### Mathematics:

<b>MAT 201*</b>	<b>Calculus 1</b>	<b>(5 credits)</b>
<b>MAT 202*</b>	<b>Calculus 2</b>	<b>(5 credits)</b>
MAT 204	Calculus 3 with Engineering Applications	(5 credits)
MAT 266	Differential Equations/Linear Algebra	(4 credits)

#### Science:

<b>CHE 111*</b>	<b>General Chemistry 1</b>	<b>(5 credits)</b>
<b>CHE 112**</b>	<b>General Chemistry 2</b>	<b>(5 credits)</b>
PHY 211	Calc-based Physics 1	(5 credits)
PHY 212	Calc-based Physics 2	(5 credits)

\*\*It is recommended for this major that you complete CHE 111+112 before transferring

#### Additional Science/Engineering Courses:

EKG 100	Introduction to Engineering	(1 credit – free elective)
BIO 111	General College Biology 1	(5 credits)
BIO 112	General College Biology 2	(5 credits)
^BIO 111+112 = CHEN 2810 (Biology for Engineers) at CU Boulder		
CHE 211	Organic Chemistry 1	(5 credits)
CHE 212	Organic Chemistry 2	(5 credits)

CHEN 1310	Engineering Computing	(3 credits)
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^this course is available through [CU Continuing Education](#) as CU Boulder online credit. If you are interested in this option, please email [cjanderson@colorado.edu](mailto:cjanderson@colorado.edu) for more information.

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

- Up to nine (9) credit hours at the lower division (100-200) 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 121	College Algebra*	4
CHE 101	Intro to Chemistry (with Lab)*	5
	<a href="#">Humanities/Social Science</a>	3
EGG 100	Intro to Engineering*	1
	<a href="#">Humanities/Social Science</a>	3
	<b>Total Credits</b>	<b>16</b>

#### Spring Semester 1

Course	Course Title	Credits
MAT 166	Pre-Calculus*	5
CHE 111	College Chemistry 1 (with lab)	5
BIO 111	General College Biology 1	5
	<b>Total Credits</b>	<b>15</b>

#### Fall Semester 2

Course	Course Title	Credits
MAT 201	Calculus 1	5
CHE 112	College Chemistry 2 (with lab)	5
BIO 112	General College Biology 2	5
	<b>Total Credits</b>	<b>15</b>

#### Spring Semester 2

Course	Course Title	Credits
MAT 202	Calculus 2	5
PHY 211	Physics 1	5
CHE 211	Organic Chemistry 1	5
	<b>Total Credits</b>	<b>15</b>

### CU-Boulder (last three years)

#### Fall Semester 3

Course	Course Title	Credits
APPM 2350	Calculus 3	4
PHYS 1120	Physics 2	4
PHYS 1140	Experimental Physics	1
CHEM 2120	Material & Energy Balances	3
CHEM 1310	Intro to Engr. Computing	3
	<b>Total Credits</b>	<b>15</b>

#### Spring Semester 3

Course	Course Title	Credits
APPM 2360	Differential Eq./Lin. Algebra	4
CHEM 3331	Organic Chemistry 2	4
CHEM 3341	Organic Chemistry 2 Lab	1
CHEM 4521	Physical Chem for Engr.	3
CHEM 3200	Fluid Mechanics	3
	<b>Total Credits</b>	<b>15</b>

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

#### Fall Semester 4

Course	Course Title	Credits
CHEM 3010	Applied Data Analysis	3
CHEM 3210	ChE Heat Transfer	3
CHEM 3320	ChE Thermodynamics	3
	<a href="#">Humanities/Social Science</a>	3
	Engineering Writing Course	3
	<b>Total Credits</b>	<b>15</b>

#### Spring Semester 4

Course	Course Title	Credits
CHEM 4611	Survey of Biochemistry	3
CHEM 4090	ChE Seminar	1
CHEM 3220	Separations & Mass Transfer	3
CHEM 4805	Biomaterials	3
CHEM 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
CHEM 4810	Biological Engr. Lab	2
CHEM 4520	Design 1	3
CHEM 4820	Biochemical Separations	3
	Technical Elective	3
	Technical Elective	3
	<b>Total Credits</b>	<b>14</b>

#### Spring Semester 5

Course	Course Title	Credits
CHEM 4530	Design 2	2
CHEM 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>