

# CHEMICAL ENGINEERING

Fall Quarter	Units	Winter Quarter	Units	Spring Quarter	Units
<b>FIRST YEAR</b>					
CEE 010 <i>Intro to Chem. &amp; Envir. Engineering</i>	1	CHEM 001B & CHEM 011B <i>General Chemistry &amp; Lab</i>	5	CHEM 001C & CHEM 011C <i>General Chemistry &amp; Lab</i>	5
CHEM 001A & CHEM 011A <i>General Chemistry &amp; Lab</i>	5	ENGL 001B <i>Intermediate Composition</i>	4	ENGL 001C or Alternate* <i>Applied Intermediate Composition</i>	4
ENGL 001A <i>Beginning Composition</i>	4	MATH 009B <i>First Year Calculus</i>	4	MATH 009C <i>First Year Calculus</i>	4
MATH 009A <i>First Year Calculus</i>	4	PHYS 040A <i>Physics (Mechanics)</i>	5	PHYS 040B <i>Physics (Heat/Waves/Sound)</i>	5
<b>SECOND YEAR</b>					
CHE 110A <i>Chemical Process Analysis</i>	3	BIOL 005A & BIOL 051A <i>Cell &amp; Molecular Biology &amp; Lab</i>	5	CHEM 008C & CHEM 081C <i>Organic Chemistry</i>	4
CHEM 008A & CHEM 081A <i>Organic Chemistry</i>	4	CHE 110B <i>Chemical Process Analysis</i>	3	CS 010A <i>C++ Programming</i>	4
MATH 046 <i>Differential Equations</i>	4	CHEM 008B & CHEM 081B <i>Organic Chemistry</i>	4	MATH 010B <i>Multivariable Calculus</i>	4
PHYS 040C <i>Physics (Electricity/Magnetism)</i>	5	MATH 010A <i>Multivariable Calculus</i>	4	Breadth _____ <i>Humanities/Social Sciences</i>	4
<b>THIRD YEAR</b>					
BCH 100 or BCH 110A <i>General Biochemistry</i>	4	CEE 158 <i>Professional Development for Engr</i>	3	CHE 116 <i>Heat Transfer</i>	4
CHE 114 <i>Applied Fluid Mechanics</i>	4	CHE 100 <i>Engineering Thermodynamics</i>	4	CHE/ENVE 130 <i>Advanced Engr. Thermodynamics</i>	4
ENGR 118 <i>Engineering Modeling &amp; Analysis</i>	5	CHE 120 <i>Mass Transfer</i>	4	CHE/ENVE 160A <i>Chem. &amp; Envir. Engineering Lab</i>	3
Breadth _____ <i>Humanities/Social Sciences</i>	4	Breadth _____ <i>Humanities/Social Sciences</i>	4	CHE 122 <i>Chemical Engineering Kinetics</i>	4
<b>FOURTH YEAR</b>					
CHE 117 <i>Separation Processes</i>	4	CHE 118 <i>Process Dynamics and Control</i>	4	CHE 140 <i>Cell Engineering</i>	4
CHE 124 <i>BioChemical Engr. Principles</i>	4	CHE 160C <i>Chemical Engineering Lab</i>	3	CHE 175B <i>Chemical Process Design</i>	4
CHE 124L <i>Biochemical Engineering Lab</i>	2	CHE 175A <i>Chemical Process Design</i>	4	Technical Elective** _____	4
CHE 160B <i>Chemical Engineering Lab</i>	4	Breadth _____ <i>Humanities/Social Sciences</i>	4	Breadth _____ <i>Humanities/Social Sciences</i>	4
Breadth _____ <i>Humanities/Social Sciences</i>	4				

To earn a B.S., you must complete all College and University requirements. For a full list of requirements, go to [catalog.ucr.edu](http://catalog.ucr.edu).

### ENGLISH COMPOSITION\*

A C or better is required in all English Composition courses to satisfy the graduation requirement. Please consult with your Academic Advisor for ENGL 1C alternatives.

### BREADTH REQUIREMENTS

For an approved list of Breadth courses, go to <http://student.engr.ucr.edu/policies/requirements/breadth.html>.

#### Humanities: (3 courses)

- A. World History: \_\_\_\_\_
- B. Fine Arts, Lit., Phil. or Rlst: \_\_\_\_\_
- C. Human Persp. on Science: \_\_\_\_\_

#### Social Sciences: (3 courses)

- A. Econ. or Posc.: \_\_\_\_\_
- B. Anth., Psyc, or Soc.: \_\_\_\_\_
- C. General Social Science: \_\_\_\_\_

#### Ethnicity: (1 course)

- 1. \_\_\_\_\_

#### Upper Division: (2 courses)

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_

### TECHNICAL ELECTIVES \*\*

Please note that Technical Electives may be offered throughout the Academic Year. Consult with your Faculty Mentor about potential offerings. See approved technical electives on back.

Course Plan is subject to change.

Total Units: 193  
Maximum units: 232

## Chemical Engineering-Biochemical Option Technical Electives

You must complete 4 units of Technical Elective coursework. Select from the list below:

Course	Course Title (Units)
BIEN 125*	Biotechnology and Molecular Bioengineering (4)
BIEN/CEE 140A	Biomaterials (4)
BIEN/CEE 159*	Dynamics of Biological Systems (4)
BIOL/MCBL 121*	Introduction to Microbiology (4)
CEE 125	Analytical Methods for Chemical and Environmental Engineers (4)
CEE 132	Green Engineering (4)
CEE 135	Chemistry of Materials(4)
CHE 102	Catalytic Reaction Engineering (4)
CHE 150	Biosensors (4)

\*Course requires prerequisites not accounted for in curriculum. Please check with the undergraduate faculty advisor about the ability to take this course.