### CHEMICAL ENGINEERING

**Fall Quarter** | **Units** | **Winter Quarter** | **Units** | **Spring Quarter** | **Units**
--- | --- | --- | --- | --- | ---
**FIRST YEAR**
CEE 010 | 1 | CHEM 001B & CHEM 01LB | 5 | CHEM 001C & CHEM 01LC | 5
Intra to Chem. & Envir. Engineering |  | General Chemistry & Lab |  | General Chemistry & Lab |  
CHEM 001A & CHEM 01LA | 5 | ENGL 001B | 4 | ENGL 001C or Alternate* | 4
General Chemistry & Lab |  | Intermediate Composition |  | Applied Intermediate Composition |  
ENGL 001A | 4 | MATH 009B | 4 | MATH 009C | 4
Beginning Composition |  | First Year Calculus |  | First Year Calculus |  
MATH 009A | 4 | PHYS 040A | 5 | PHYS 040B | 5
First Year Calculus |  | Physics (Mechanics) |  | Physics (Heat/Waves/Sound) |  

**SECOND YEAR**
CHE 110A | 3 | BIOL 005A & BIOL 05LA | 5 | CHEM 008C & CHEM 08LC | 4
Chemical Process Analysis |  | Cell & Molecular Biology & Lab |  | Organic Chemistry |  
CHEM 008A & CHEM 08LA | 4 | CHE 110B | 3 | CS 010 | 4
Organic Chemistry |  | Chemical Process Analysis |  | C++ Programming |  
MATH 046 | 4 | CHEM 008B & CHEM 08LB | 4 | MATH 010B | 4
Differential Equations |  | Organic Chemistry |  | Multivariable Calculus |  
PHYS 040C | 5 | MATH 010A | 4 | Breadth | 4
Physics (Electricity/Magnetism) |  | Multivariable Calculus |  | Humanities/Social Sciences |  

**THIRD YEAR**
BCH 100 or BCH 110A | 4 | CEE 158 | 3 | CHE 116 | 4
General Biochemistry |  | Professional Development for Engr |  | Heat Transfer |  
CHE 114 | 4 | CHE 100 | 4 | CHE/ENVE 130 | 4
Applied Fluid Mechanics |  | Engineering Thermodynamics |  | Advanced Engr. Thermodynamics |  
ENGR 118 | 5 | CHE 120 | 4 | CHE 160A | 3
Engineering Modeling & Analysis |  | Mass Transfer |  | Chem. & Envir. Engineering Lab |  
Breadth | 4 | Breadth | 4 | CHE 122 | 4
Humanities/Social Sciences |  | Humanities/Social Sciences |  | Chemical Engineering Kinetics |  

**FOURTH YEAR**
CHE 117 | 4 | CHE 118 | 4 | CHE 140 | 4
Separation Processes |  | Process Dynamics and Control |  | Cell Engineering |  
CHE 124 | 4 | CHE 160C | 3 | CHE 175B | 4
BioChemical Engr. Principles |  | Chemical Engineering Lab |  | Chemical Process Design |  
CHE 124L | 2 | CHE 175A | 4 | Technical Elective** | 4
Biochemical Engineering Lab |  | Chemical Process Design |  |  |  
CHE 160B | 4 | Breadth | 4 | Breadth | 4
Chemical Engineering Lab |  | Humanities/Social Sciences |  | Humanities/Social Sciences |  
Breadth | 4 | Humanities/Social Sciences |  |  |  

To earn a B.S., you must complete all College and University requirements. For a full list of requirements, go to 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., Psy, 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:

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

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