ENGINEERING

Chemical

LOWER DIVISION MAJOR REQUIREMENTS FOR TRANSFER

The following courses at OCC should be taken prior to transfer. Courses not offered at OCC will need to be taken after transfer. Four-year colleges and universities often make changes in their requirements for majors. The information contained in this guide is based on the most recent information available from the four-year school and does not constitute an official agreement. Recent updates to this Guide can be found on the Transfer Center website at: www.occ.cccd.edu/departments/studentsvcs/transferctr

UNIVERSITY OF CALIFORNIA, BERKELEY
(College of Chemistry)

Notes: Transfer applicants are screened for completion of CHEM 180, 185, MATH 180(180H) & 185(185H) or 182H, ENGL 100, 101(101H), PHYS 185, plus 2 additional courses toward the major by the end of the Spring semester prior to admission. Completion of additional chemistry, mathematics, calculus-based physics, engineering and a computer programming course for science or engineering students is also encouraged. All required technical courses (math, science, engineering) must be completed with a letter grade. Transfer applicants need “B” grades or better in math and science courses to be adequately prepared. A 3.0 overall GPA is required for admission consideration. The applicant personal statement plays an important role in the selection process. The college reviews the essay for evidence of interest in the chosen field and a thoughtful match between the academic program and the academic and career objectives.

AP Credit:

Calculus (AB Exam) - score of 3 = MATH 1A
Calculus (BC Exam) - score of 3 or 4 = MATH 1A
Calculus (BC Exam) - score of 5 = MATH 1AB
English Language & Composition or English Literature & Composition - score of 4 or 5 = ENGL 1A only

BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING & MATERIALS SCIENCE & ENGINEERING

Major Requirements:

UCB
CHEM 1A/AL CHEM 180
CHEM 1B CHEM 185
Organic Chemistry CHEM 220/220L & 225/225L**
Electronic Techniques for Engineering No Equivalent Course
BIOLOGY 1A/AL BIOL 180(or 180H) & 182/182L or 283
ENGIN 7 No Equivalent Course
ENGIN 45 No Equivalent Course
MATH 1A MATH 180(or 180H)*
MATH 1B MATH 185(or 185H)*
MATH 53 MATH 280(or 280H)
MATH 54 MATH 285(or 285H)
PHYS 7ABC PHYS 185, 280, 285
ENGLISH R1A/R1B ENGL 100 & 101(or 101H)

OCC
CHEM 180
CHEM 185
CHEM 280(or 280H)
CHEM 285(or 285H)
PHYS 285(or 285H)
ENGL 100 & 101(or 101H)

*MATH 182H is also equivalent to MATH 1AB.
**After transfer, students must take the ACS Organic Test and score at the 75th percentile.

BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING & NUCLEAR ENGINEERING

Major Requirements:

UCB
CHEM 1A/AL CHEM 180
CHEM 1B CHEM 185
Electronic Techniques for Engineering No Equivalent Course
BIOLOGY 1A/AL BIOL 180(or 180H) & 182/182L or 283
ENGIN 7 No Equivalent Course
ENGIN 45 No Equivalent Course
MATH 1A MATH 180(or 180H)*
MATH 1B MATH 185(or 185H)*
MATH 53 MATH 280(or 280H)
MATH 54 MATH 285(or 285H)
PHYS 7ABC PHYS 185, 280, 285
ENGLISH R1A/R1B ENGL 100 & 101(or 101H)

OCC
CHEM 180
CHEM 185
CHEM 280(or 280H)
CHEM 285(or 285H)
PHYS 285(or 285H)
ENGL 100 & 101(or 101H)

*PAYMENT 182H is also equivalent to MATH 1AB.
**After transfer, students must take the ACS Organic Test and score at the 75th percentile.

UNIVERSITY OF CALIFORNIA, IRVINE

Important Note: Preference is given to students with the highest grades overall who have completed the required courses: one year of calculus, one year of calculus-based physics w/lab, one course in general chemistry w/lab and two additional courses for the major.
BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING

UCI
MATH 2AB & 2D
MATH 180 (or 180H) & 185 (or 185H) & MATH 280 (or 280H)*
MATH 2E
MATH 280 (or 280H)
MATH 3D
MATH 285 (or 285H)
MATH 2J
Satisfied by courses listed above
CHEM 45ABC
No Equivalent Courses
EECS 10 or
CS 150 or
ENGRMAE 10
CS 150
ENGR 54
No Equivalent Course
BIO SCI 98
BIO 281 (or 281H)
BIO SCI 99
BIO 282 (or 282H)
CHEM 1ABC, 1LC/LD
CHEM 180 & 185
CHEM 51ABC/LA/LB
CHEM 220/220L & 225/225L
PHYS 7CD/LC/LD
PHYS 185 & 280
*MATH 182H & 280 (or 280H)* will also satisfy this requirement.

OCC
MATH 180 (or 180H) & 185 (or 185H) & MATH 280 (or 280H)*
MATH 280 (or 280H)
MATH 285 (or 285H)
MATH 280 (or 280H)*
Satisfied by courses listed above
CHEM 30AB & BL
CHEM 220/221 & 225

*The following courses will satisfy both the Social Science Area and campus graduation requirement in Ethnicity.

University of California, Los Angeles

Requirements for Admission:
Admission to an engineering major as a junior level transfer is very competitive. All courses must be taken for a letter grade. The most important selection criteria are completion of required prep courses and academic performance. A minimum transferable cumulative GPA of 3.3 is required for consideration. Prep courses should be completed by the end of the spring term prior to fall enrollment. Alternate major applicants will not be considered. School of Engineering & Applied Science GE is not required to be admitted, but it is beneficial for students to complete one course in each of the following areas: arts, humanities, social and life sciences. IGETC is not recognized, but may be referenced to make course selections.

General Education Requirements for All Degrees:
Instead of the IGETC, students should complete:
ENGL 100
ENGL 101 (or 101H) or 102 (or 102H)
One course from each area: arts, humanities, social sciences and life sciences.

BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING

Courses Required for Admission:

UCAL
CHEM 20AB, 20L, 30AL
CHEM 180 & 185
MATH 31AB
MATH 180 (or 180H) & 185 (or 185H)*
MATH 32AB
MATH 280 (or 280H)
MATH 33AB
MATH 285 (or 285H)
PHYS 1ABC, 4AL, BL
PHYS 185, 280 & 285**
ENGRMAE 3
ENGL 100
Computer Programming
CS 250
A second course in English composition from: ENGL 101, 101H, 102, 102H, PHIL 150

Additional Requirements:
CHEM 30AB & BL
CHEM 220/221 & 225

*BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING

Options: Biochemical Engineering, Chemical Engineering Bioengineering, Nanotechnology

UCR
CHEM 1ABC w/labs
CHEM 180 & 185
MATH 9ABC
MATH 180 (or 180H) & 185 (or 185H)*
MATH 46
Satisfied by lower division courses
MATH 2AB & 2D
MATH 180 (or 180H) & 185 (or 185H)*

Options: Biochemical Engineering, Chemical Engineering Bioengineering, Nanotechnology

UCO
CHEM 1ABC
CHEM 180 & 185
MATH 9ABC
MATH 180 (or 180H) & 185 (or 185H)*

*MATH 182H & 280 (or 280H)* will also satisfy this requirement.

University of California, Riverside

Note: Admission to this major is competitive. Students are admitted fall and winter quarters only. Students are strongly encouraged to focus on preparatory course work for the major rather than IGETC. Students must attain a GPA of at least 2.8 in all UC transferable courses. Also required is a GPA of 2.5 in the calculus sequence and in at least one additional sequence (chemistry, physics, second year calculus or biology). AP credit can be accepted in lieu of some college course work. Students with less than 60 units completed and who have completed two semesters of UC transferable English composition, in addition to the required GPA and major preparation are also eligible to apply. For TAG program information visit: www.engr.ucr.edu/tag.html Consult the College of Engineering at: (951) 827-3647 or www.engr.ucr.edu/trasnferring.html

General Education Requirements for All Degrees

UCR
ENGR 54
No Equivalent Course
BIO SCI 98
BIO 281 (or 281H)
BIO SCI 99
BIO 282 (or 282H)
CHEM 1ABC, 1LC/LD
CHEM 180 & 185
CHEM 51ABC/LA/LB
CHEM 220/220L & 225/225L
PHYS 7CD/LC/LD
PHYS 185 & 280

UCO
MATH 180 (or 180H) & 185 (or 185H)*
MATH 280 (or 280H)*
Satisfied by courses listed above
CHEM 30AB & BL
CHEM 220/221 & 225

*The following courses will satisfy both the Social Science Area and campus graduation requirement in Ethnicity.

AP Credit:
Calculus (AB Exam) - score of 3, 4 or 5 = MATH 9A
Calculus (BC Exam) - score of 3, 4 or 5 = MATH 9AB
Computer Science - score of 3, 4 or 5 = CS 10

For Bioengineering add (recommended prior to transfer):

UCR
BIO 182/182L & 183/183L
BIO 180 (or 180H)

UCO
CHEM 1ABC
CHEM 180 & 185
MATH 9ABC
MATH 180 (or 180H) & 185 (or 185H)*

*MATH 182H & 280 (or 280H)* will also satisfy this requirement.

Departments:

Engineering

Chemical Engineering

General Education Requirements for All Degrees

UCR
ENGL 1ABC
ENGL 100 & either 101 (or 101H) or 102 (or 102H) or ENGL 109 or PHIL 150

UCO
HIST 161 (or 161H) or 162 (or 162H)
One course from:

Social Sciences

One course from:
ANTH 100, 100H, 102, 185, 280, 285
ETHS 100, 150, HIST 101, 150, PSYC 100, 100H, SOC 100, 100H, 185, 185H

Ethnicity

One course from:
* ECON 170, 175, PSCI 110, 180, 180H, 185

Natural Sciences & Mathematics

Satisfied by lower division courses required for the major below.

Continued>>>>>
For Biochemical and Chemical Engineering add (recommended prior to transfer):
CEE 10 No Equivalent Course
**MATH 182H is also equivalent to MATH 9ABC.  (10/12:A11-12)

**UNIVERSITY OF CALIFORNIA, SANTA BARBARA**

Note: Transfer students may complete IGETC or the College of Engineering general education. Students who choose to follow College of Engineering GE should complete two to three general ed courses prior to transfer. See ASSIST for requirements. You should complete as many major prep courses as possible prior to transferring. Major prep courses must be completed with a grade of "C" or better.

**BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING**

**UCSB**

**Required base preparation courses:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Equivalent Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 1, 2, 3/3L, 4/4L</td>
<td>PHYS 185 &amp; 280 &amp; 285</td>
</tr>
<tr>
<td>CHEM 1A/L, 1B/L, 1C/L</td>
<td>CHEM 180 &amp; 185</td>
</tr>
<tr>
<td>MATH 3AB</td>
<td>MATH 180(or 180H) &amp; 185(or 185H)*</td>
</tr>
<tr>
<td>MATH 3C</td>
<td>MATH 285(or 285H)</td>
</tr>
<tr>
<td>MATH 5A</td>
<td>MATH 285(or 285H)</td>
</tr>
<tr>
<td>ENGR 3</td>
<td>No Equivalent Course</td>
</tr>
</tbody>
</table>

**Strongly recommended advanced preparation courses:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Equivalent Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 6AL/BL/109ABC*</td>
<td>CHEM 220/220L &amp; 225/225L**</td>
</tr>
<tr>
<td>MATH 5B</td>
<td>MATH 280(or 280H)</td>
</tr>
<tr>
<td>MATH 5C</td>
<td>MATH 280(or 280H)</td>
</tr>
<tr>
<td>CH E 1A &amp; 10</td>
<td>No Equivalent Courses</td>
</tr>
</tbody>
</table>

*MATH 182H is also equivalent to MATH 3AB.
**No upper division credit. (10/12:A11-12)

**CAL POLY, POMONA**

**BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING**

**CPP**

**Required Core Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Equivalent Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE 131/141L</td>
<td>No Equivalent Courses</td>
</tr>
<tr>
<td>CHE 132/142L</td>
<td>No Equivalent Courses</td>
</tr>
<tr>
<td>CHE143L</td>
<td>No Equivalent Courses</td>
</tr>
<tr>
<td>CHE 201/211L</td>
<td>No Equivalent Courses</td>
</tr>
<tr>
<td>CHE 202/212L</td>
<td>No Equivalent Courses</td>
</tr>
</tbody>
</table>

**Required Support Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Equivalent Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHM 121/L, 122/L, 123</td>
<td>CHEM 180 &amp; 185</td>
</tr>
<tr>
<td>ECE 231/231L</td>
<td>ENGR 285</td>
</tr>
<tr>
<td>MATH 114, 115, 116</td>
<td>MATH 180(or 180H) &amp; 185(or 185H)*</td>
</tr>
<tr>
<td>MATH 214, 215</td>
<td>MATH 280(or 280H)</td>
</tr>
<tr>
<td>MAT 216 or 224</td>
<td>MATH 285</td>
</tr>
<tr>
<td>ME 214/224L</td>
<td>ENGR 280</td>
</tr>
<tr>
<td>MTE 207</td>
<td>No Equivalent Course</td>
</tr>
<tr>
<td>PHYS 131/L, 132/L, 133/L</td>
<td>PHYS 185, 280, 285 or 130, 135 &amp; 285</td>
</tr>
</tbody>
</table>

*MATH 182H is also equivalent to MAT 114, 115, 116. (10/12:A11-12)

**UNIVERSITY OF SOUTHERN CALIFORNIA**

Note: Students may fulfill four of the six required GE requirements with transfer courses taken before starting USC (see USC GE requirements). Credit for courses is not granted if (1) the course is taken before high school graduation, (2) the grade is lower than C-, (3) is a lab science or foreign language course and is not taken in a traditional classroom setting, (4) is offered through "study abroad", (5) repeats credit from another college course or from an AP or IB exam.

**BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING**

**USC**

<table>
<thead>
<tr>
<th>Course</th>
<th>Equivalent Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH E 100</td>
<td>No Equivalent Course</td>
</tr>
<tr>
<td>CH E 200</td>
<td>No Equivalent Course</td>
</tr>
<tr>
<td>CH E 210</td>
<td>No Equivalent Course</td>
</tr>
<tr>
<td>CH E 220</td>
<td>No Equivalent Course</td>
</tr>
<tr>
<td>CHEM 11A &amp; 111B</td>
<td>CHEM 180 &amp; 185</td>
</tr>
<tr>
<td>CHEM 251 or BIOL 200 or MIKR 200</td>
<td>No Equivalent Course or BIOL 100 or BIOL 210</td>
</tr>
<tr>
<td>EE 211</td>
<td>ENGR 285</td>
</tr>
<tr>
<td>ENGR 101 &amp; 102</td>
<td>No Equivalent Courses</td>
</tr>
</tbody>
</table>

**OCC**

<table>
<thead>
<tr>
<th>Course</th>
<th>Equivalent Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 205</td>
<td>ENGR 280</td>
</tr>
<tr>
<td>MATH 122 &amp; 123</td>
<td>MATH 180(or 180H) &amp; 185(or 185H)+</td>
</tr>
<tr>
<td>MATH 224</td>
<td>MATH 280(or 280H)</td>
</tr>
<tr>
<td>PHYS 151</td>
<td>PHYS 185+</td>
</tr>
<tr>
<td>PHYS 152 or E E 210/210L</td>
<td>PHYS 280 or No Equivalent Courses</td>
</tr>
</tbody>
</table>

*MATH 182H is also equivalent to MATH 122 & 123.
+Must be completed within one calendar year of declaring the major.

Note: This major has implemented competitive admissions. See CSULB catalog for supplemental admission criteria. A grade of "C" or better must be achieved in all required courses. (10/12:A11-12)
*MATH 182H is equivalent to MATH 126.
+Subject credit for MATH 180(or 180H) and MATH 185(or 185H) can be earned by successful completion of MATH 280(or 280H).

BACHELOR OF SCIENCE IN CHEMICAL/BIOCHEMICAL ENGINEERING

**USC**  
Composition/Writing  ENGL 101(or 101H) or 102(or 102H)*  
Diversity  One course from: ANTH 102, 150, ETHS 100, 150, GNDR 100, 130, HIST 150, SOC 150, 180(or 180H), 185(or 185H)
CHEM 105AB CHEM 180 & 185  
CHEM 322A CHEM 220/220L & 225/225L  
PHYS 151 & 152 PHYS 185, 280 & 285  
MATH 125 & 126 Either MATH 180(or 180H) or 185(or 185H)+*  
MATH 226 MATH 280(or 280H)  
MATH 245 MATH 285(or 285H)

**Note:** There are also requirements in biology, chemical engineering and a technical elective for which there are no equivalent courses at OCC.

*MATH 182H is equivalent to MATH 126.
+Subject credit for MATH 180(or 180H) and MATH 185(or 185H) can be earned by successful completion of MATH 280(or 280H).