

# ORANGE COAST COLLEGE

## TRANSFER CURRICULUM GUIDE

### ENGINEERING

#### Chemical Engineering

#### **LOWER DIVISION MAJOR REQUIREMENTS FOR TRANSFER**

The following courses should be taken at OCC prior to transfer. Courses not offered at OCC will need to be taken after transfer unless otherwise noted. 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](http://www.occ.cccd.edu/departments/studentsvcs/transferctr)

#### **UNIVERSITY OF CALIFORNIA, BERKELEY**

**Note:** Transfer applicants are expected to complete CHEM 180, 185, MATH 180(180H) & 185(185H) or 182H, 280(or 280H), 285(or 285H), ENGL 100, 101(101H), PHYS 185 and 280 toward the major by the end of the Spring semester prior to admission. All major courses must be taken for a letter grade. IGETC is not required, however if completed by the end of the spring term preceding fall enrollment, may be used to fulfill the Reading/Composition requirement. The applicant's 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 for Engineering Majors:**

<b>Course</b>	<b>Score</b>
Biology	score of 4 or 5 = BIOL 1A/AL & 1B
Calculus (AB Exam)	score of 3 = MATH 1A
Calculus (BC Exam)	score of 4 or 5 = MATH 1A
Calculus (BC Exam)	score of 5 = MATH 1AB
English Language & Composition	score of 4 or 5 = ENGL R1A only

#### **BACHELOR OF SCIENCE CHEMICAL ENGINEERING**

<b>UCB</b>	<b>OCC</b>	<b>(12/14:A16-17)</b>
<b>Major Requirements:</b>		
CHEM 1A/AL	CHEM 180	
CHEM 1B	CHEM 185	
Organic Chemistry	CHEM 220/220L, 225/225L**	
BIOL 1A/AL	BIOL 180 & 185	
ENGIN 7	No Equivalent Course	
ENGIN 45/45L	No Equivalent Courses	
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	
ENGL R1A	ENGL 100	
*MATH 182H is also equivalent to MATH 1AB.		
**After transfer, students must take the ACS Organic Chemistry Exam and score at the 75th percentile.		

**BACHELOR OF SCIENCE CHEMICAL ENGINEERING & MATERIALS SCIENCE & ENGINEERING**

<b>UCB</b>	<b>OCC</b>	<b>(12/14:A16-17)</b>
<b>Major Requirements:</b>		
MATH 1A	MATH 180(or 180H)*	
MATH 1B	MATH 185(or 185H)*	
CHEM 1A/AL	CHEM 180	
CHEM 1B	CHEM 185	
Organic Chemistry	CHEM 220/220L, 225/225L**	
BIOL 1A/AL	BIOL 180 & 185	
ENGIN 7	No Equivalent Course	
ENGIN 45/45L	No Equivalent Courses	
MATH 53	MATH 280(or 280H)	
MATH 54	MATH 285(or 285H)	
PHYS 7ABC	PHYS 185, 280, 285	
ENGL R1A	ENGL 100	
*MATH 182H is also equivalent to MATH 1AB.		
**After transfer, students must take the ACS Organic Chemistry Exam and score at the 75th percentile.		

**BACHELOR OF SCIENCE CHEMICAL ENGINEERING & NUCLEAR ENGINEERING**

<b>UCB</b>	<b>OCC</b>	<b>(10/12:A16-17)</b>
<b>Major Requirements</b>		
CHEM 1A/AL	CHEM 180	
CHEM 1B	CHEM 185	
ENGIN 45/45L	No Equivalent Courses	
ENGIN 7	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	
ENGL R1A	ENGL 100	
*MATH 182H is also equivalent to MATH 1AB.		
**After transfer, students must take the ACS Organic Chemistry Exam and score at the 75th percentile.		

**UNIVERSITY OF CALIFORNIA, IRVINE****BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING**

<b>UCI</b>	<b>OCC</b>	<b>(10/15:A16-17)</b>
<b>Required for transfer:</b>		
MATH 2AB	MATH 180(or 180H) & 185(or 185H)*	
MATH 2D <u>or</u> 2E	MATH 280(or 280H)	
MATH 3A	MATH 235 <u>or</u> 285(or 285H)	
MATH 3D	MATH 285(or 285H)	
PHYS 7CD, LC/LD	PHYS 185 & 280	
CHEM 1ABC, LC/LD	CHEM 180 & 185**	
EECS 10 <u>or</u> ENGRMAE 10	CS 150	
CHEM 51ABC, LB/LC	CHEM 220/220L & 225/225L	
<b>Additional major requirements:</b>		
ENGR 54	No Equivalent Course	
CBEMS 45ABC	No Equivalent Courses	
<b>Additional major electives:</b>		
BIO SCI 98	BIOL 281	
BIO SCI 99	BIOL 282(or 282H)	<b>Continued</b>

<b>UCI</b>	<b>OCC</b>	<b>(10/15:A16-17)</b>
BME 50AB	No Equivalent Courses	
*MATH 182H & 280(or 280H) will also satisfy this requirement.		
**Articulation based on entire sequence - complete entire year.		
<b>Important Note: Preference is given to students with the highest grades overall who have completed the required courses with a grade of "C" or better by the end of the spring term prior to transfer.</b>		

## 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 3.4 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. IGETC is not recognized, but may be referenced to make course selections. Breadth and GE requirements may be fulfilled by completion of IGETC. Partial IGETC is not accepted. Although not required to complete the HSSEAS GE requirements for admission, it is beneficial for students to complete one course from each of the following areas: arts, humanities, social sciences and life sciences.

## BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING

<b>UCLA</b>	<b>OCC</b>	<b>(12/14:A16-17)</b>
<b>Courses Required for Admissions:</b>		
CHEM 20AB, 20L, 30AL	CHEM 180 & 185	
CHEM 30AB	CHEM 220 & 225	
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**	
ENGGCOMP 3	ENGL 100	
Computer Programming	CS 250	
<b>A second course in English composition from: ENGL 101, 101H, 102, 102H, PHIL 150</b>		
<b>Additional Requirements (Strongly Recommended):</b>		
C&EE M20	No Equivalent Course	
*MATH 182H is also equivalent to MATH 31AB.		
**Entire physics sequence should be completed at OCC.		

## UNIVERSITY OF CALIFORNIA, RIVERSIDE

### General Education Requirements for All Degrees

<b>UCR</b>	<b>OCC</b>
ENGL 1ABC	ENGL 100 & <b>either</b> 101(or 101H) <b>or</b> 102(or 102H) <b>or</b> ENGL 109 <b>or</b> PHIL 150
Humanities	HIST 161(or 161H) <b>or</b> 162(or 162H) <b>One course from:</b> ART 100, 100H, 101, 101H, 102, 103, ENGL 150, 150H, 160, 160H, 161, 161H, 170, 170H, 176, 176H, 181, 181H, 270, 270H, 275, 275H, MATH 220, MUS 100, PHIL 100, 120, 220, RLST 120, 150
Social Sciences	<b>One course from:</b> ECON 170, 175, PSCI 110, 180, 180H, 185
Ethnicity	<b>One course from:</b> ANTH 100, 100H, 102*, 185, 280, ETHS 100*, 150*, HIST 101*, PSYC 100, 100H, SOC 100, 100H, 185, 185H
Natural Sciences & Mathematics	Satisfied by lower division courses required for the major.
*The following courses will satisfy both the Social Science Area and campus graduation requirement in Ethnicity.	

## BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING

Options: Biochemical Engineering, Chemical Engineering, Bioengineering, Nanotechnology

<b>UCR</b>	<b>OCC</b>	<b>(12/14:A16-17)</b>
<b>Courses Required for Admission:</b>		
CHEM 1ABC w/labs	CHEM 180 & 185	
MATH 9ABC	MATH 180(or 180H) & 185(or 185H)*	
PHYS 40ABC	PHYS 185 & 280 & 285	
<b>Courses strongly recommended prior to transfer:</b>		
BIOL 5A/LA	BIOL 180	
Organic Chemistry	CHEM 220/220L & 225/225L	
CS 10	CS 122 <u>or</u> 131 <u>or</u> 140 <u>or</u> 150 <u>or</u> 170	
MATH 10A <u>or</u> 10B	MATH 280(or 280H)	
MATH 46	MATH 285(or 285H)	
3 Humanities or Social Science breadth courses from GE Requirements.		
<b>For Biochemical and Chemical Engineering and Nanotechnology add (recommended prior to transfer):</b>		
CEE 10	No Equivalent Course	
*MATH 182H is also equivalent to MATH 9ABC.		
<b>Note: This major is selective. Students are admitted Fall quarter only. Take all courses for a letter grade except for Humanities and Social Sciences. 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 2.5 GPA 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. Consult the College of Engineering at: (951) 827-3647 or <a href="http://www.engr.ucr.edu/undergrads/transferring">www.engr.ucr.edu/undergrads/transferring</a></b>		

## UNIVERSITY OF CALIFORNIA, SANTA BARBARA

### BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING

<b>UCSB</b>	<b>OCC</b>	<b>(12/14:A16-17)</b>
<b>Required base preparation courses:</b>		
PHYS 1, 2, 3/3L	PHYS 185, 280, 285	
CHEM 1A/L, 1B/L, 1C/L	CHEM 180 & 185	
MATH 3AB	MATH 180(or 180H) & 185(or 185H)*	
MATH 4AB	MATH 285(or 285H)	
ENGR 3	No Equivalent Course	
<b>Strongly recommended advanced preparation courses:</b>		
CHEM 6AL/BL & 109ABC**	CHEM 220/220L & 225/225L	
MATH 6A <u>or</u> 6B	MATH 280(or 280H)	
<b>Other major prep courses:</b>		
CH E 5 & 10	No Equivalent Courses	
*MATH 182H is also equivalent to MATH 3AB. **No upper division credit.		
<b>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 education courses prior to transfer. See ASSIST for requirements. Students are strongly advised to complete as many major prep courses as possible prior to transferring. Major prep courses must be completed with a letter grade of "C" or better. The required GPA in the required prep courses is 3.6.</b>		

## CALIFORNIA STATE UNIVERSITY, LONG BEACH

### BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING

<b>CSULB</b>	<b>OCC</b>	<b>(12/14:A16-17)</b>
CH E 100	No Equivalent Course	
CH E 200	No Equivalent Course	
CH E 210	No Equivalent Course	<b>Continued</b>

<b>CSULB</b>	<b>OCC</b>	<b>(12/14:A16-17)</b>
CH E 220	No Equivalent Course	
CHEM 111AB	CHEM 180 & 185	
ENGR 101 & 102	No Equivalent Courses**	
C E 205	ENGR 280	
MATH 122 & 123	MATH 180(or 180H) & MATH 185(or 185H)+*	
MATH 224	MATH 280(or 280H)	
PHYS 151	PHYS 185+	
PHYS 152 <u>or</u> E E 210/210L	PHYS 280 <u>or</u> No Equivalent Courses	
<b>One of the following:</b>	<b>One of the following:</b>	
CHEM 220A/223A & 220B/223B	CHEM 220/220L & 225/225L	
CHEM 227 & BIOL 200	No Equivalent Course & BIOL 100(or 100H)	
BIOL 205	BIOL 221	
BIOL 211	BIOL 185 <u>or</u> BIOL 182/182L & 183/183L	
*MATH 182H is also equivalent to MATH 122 & 123.		
**Requirement waived for transfer students who have completed 3 units in CSU GE Area E.		
+Must be completed within one calendar year of declaring the major.		
<b>Note: This major is impacted. See CSULB catalog for supplemental major specific admission criteria. Transfer students must complete 60 units or more and the CSU GE requirements in Written and Oral Communication, Critical Thinking and Mathematics/Quantitative Reasoning with a grade of "C" or better by the end of the prior spring term for fall admission or by the end of the prior summer for spring admission. Critical thinking may be waived as this is integrated throughout the engineering baccalaureate programs. Students are encouraged to take as many of these courses prior to transfer as possible. A grade of "C" or better must be achieved in all required major courses. Complete sequence courses at one institution.</b>		

## CAL POLY, POMONA

### BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING

<b>CPP</b>	<b>OCC</b>	<b>(12/14:A16-17)</b>
<b>Required Core Courses</b>		
CHE 131/141L	No Equivalent Courses	
CHE 132/142L	No Equivalent Courses	
CHE 143L	No Equivalent Course	
CHE 201/211L	No Equivalent Courses	
CHE 202/212L	No Equivalent Courses	
<b>Required Support Courses</b>		
CHM 121/L, 122/L, 123/L	CHEM 180 & 185	
Elective	CHEM 220/220L & 225/225L+	
ECE 231/231L	ENGR 285	
MAT 114, 115, 116	MATH 180(or 180H) & 185(or 185H)*	
MAT 214, 215	MATH 280(or 280H)	
MAT 224	MATH 285(or 285H)	
ME 214/224L	ENGR 280	
MTE 207	No Equivalent Course	
PHYS 131/L, 132/L, 133/L	PHYS 185, 280, 285 <u>or</u> 130, 135 & 285	
*MATH 182H is also equivalent to MAT 114, 115, 116.		
+No upper division credit.		
<b>Note: More students apply than can be accommodated, which requires a supplementary admissions process by the University and the Department.</b>		

## 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.

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**BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING****BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING - Petroleum Engineering**

<b>USC</b>	<b>OCC</b>	<b>(12/14:A16-17)</b>
WRIT 130	ENG 101 (or 101H) <u>or</u> 102 (102H)*	
Global Perspectives	ANTH 150 <u>or</u> PSCI 110 <u>or</u> SOC 150	
Traditions & Historical	<b>One course from:</b> ARCH 290(or 290H), 296(or 296H), ART 100(or 100H), 101(or 101H), 103, ENGL 176(or 176H), HIST 141, 161(or 161H), 162(or 162H), 170(or 170H), 175(or 175H), 180(or 180H), 185(or 185H), PHIL 125, PSCI 188, RLST 110, 140, 150, THEA 101	
CHEM 105AB	CHEM 180 & 185	
CHEM 322AB	CHEM 220/220L & 225/225L	
PHYS 151 & 152	PHYS 185, 280 & 285	
MATH 125 & 126	MATH 180(or 180H) & 185(or 185H or 182H)	
MATH 226	MATH 280(or 280H)	
MATH 245	MATH 285(or 285H)	
*Course must be taken for a letter grade.		

**BACHELOR OF SCIENCE IN CHEMICAL/BIOCHEMICAL ENGINEERING**

<b>USC</b>	<b>OCC</b>	<b>(12/14:A16-17)</b>
WRIT 130	ENG 101 (or 101H) <u>or</u> 102 (102H)*	
Global Perspectives	ANTH 150 <u>or</u> PSCI 110 <u>or</u> SOC 150	
Traditions & Historical	<b>One course from:</b> ARCH 290(or 290H), 296(or 296H), ART 100(or 100H), 101(or 101H), 103, ENGL 176(or 176H), HIST 141, 161(or 161H), 162(or 162H), 170(or 170H), 175(or 175H), 180(or 180H), 185(or 185H), PHIL 125, PSCI 188, RLST 110, 140, 150, THEA 101	
PHYS 151 & 152	PHYS 185, 280 & 285	
MATH 125 & 126	MATH 180(or 180H) & 185(or 185H or 182H)	
MATH 226	MATH 280(or 280H)	
MATH 245	MATH 285(or 285H)	
*Course must be taken for a letter grade.		

**BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING – Nanotechnology**

<b>USC</b>	<b>OCC</b>	<b>(12/14:A16-17)</b>
WRIT 130	ENG 101 (or 101H) <u>or</u> 102 (102H)*	
Global Perspectives	ANTH 150 <u>or</u> PSCI 110 <u>or</u> SOC 150	
Traditions & Historical	<b>One course from:</b> ARCH 290(or 290H), 296(or 296H), ART 100(or 100H), 101(or 101H), 103, ENGL 176(or 176H), HIST 141, 161(or 161H), 162(or 162H), 170(or 170H), 175(or 175H), 180(or 180H), 185(or 185H), PHIL 125, PSCI 188, RLST 110, 140, 150, THEA 101	
CHEM 105AB	CHEM 180 & 185	
CHEM 322A	CHEM 220/220L	
PHYS 151 & 152	PHYS 185, 280 & 285	
MATH 125 & 126	MATH 180(or 180H) & 185(or 185H or 182H)	
MATH 226	MATH 280(or 280H)	
MATH 245	MATH 285(or 285H)	
*Course must be taken for a letter grade.		

**ADDITIONAL AGREEMENTS ARE AVAILABLE ON THE INTERNET FOR THE FOLLOWING SCHOOLS AT:**

[www.assist.org](http://www.assist.org)

<b>Campus</b>	<b>Campus</b>
UC Davis	UC San Diego
San Jose State	