



# ENGINEERING MAJOR

## COUNSELING DIVISION

The following requirements for the major are subject to change without notice. To assure accuracy of the information on this sheet, you should consult with the Engineering counselor or review articulation agreements via the Internet at [www.assist.org](http://www.assist.org). You may also consult with the Articulation Officer for specific articulation agreements.

**NOTE:** Many universities receive more applications than they can accept. Engineering majors should consider applying to more than one school. **Many of the courses required for this major have prerequisites that are listed in the El Camino College Catalog. \*Computer Science 3 & 10 are offered fall semester only; Math 210 & Computer Science 30 are offered spring semester only.**

### **Transfer Requirements: (IGETC is NOT Recommended)**

Admission to Engineering programs is very competitive. Minimum grades of "C" or better are required in lower division requirements. Students should complete all lower division requirements prior to transfer to be competitive for admission. Additionally, to be minimally eligible to transfer to a UC campus, students must meet minimum eligibility: **two semesters of English composition** (English 1A and one course from English 1B or 1C), one transferable math, and four courses from at least two of the following areas: Arts/Humanities, Social and Behavioral Sciences, and Physical and Biological Sciences. Please see a counselor for additional admissions information.

### **CALIFORNIA STATE UNIVERSITY, FULLERTON** (2007-2009) [www.fullerton.edu/ecs/](http://www.fullerton.edu/ecs/)

**Requirements for all Options:** Math 190, 191, 220, 270; Physics 1A-1B-1C

**Computer Engineering:** add Biology 10; Computer Science 2; Math 210; Physics 1D

**Mechanical Engineering:** add Physics 1D; Computer Science 3\*

**Electrical Engineering:** add Biology 10; Chemistry 4; Physics 1D

**Engineering Science:** add Chemistry 1A; Computer Science 10\*; Physics 1D

**Civil Engineering:** add Biology 10; Chemistry 4

**Mechanical:** add Computer Science 10\*; Physics 1D; Chemistry 1A

**Pharmaceutical Engineering:** add Computer Science 10\*, Biology 10, Chemistry 1A, 1B, 7A

Emphases available in Architectural Engineering (under civil engineering)

### **CALIFORNIA STATE UNIVERSITY, LONG BEACH** (2009-2010) [www.csulb.edu/colleges/coe](http://www.csulb.edu/colleges/coe)

**NOTE:** *Engineering students can waive 6 units of general education; 3 units CSU general education pattern from Life Science (Area B 1A), or Area C or Area E; and 3 units from Area D.*

**Aerospace Engineering:** Chemistry 1A; Computer Science 10\* at ECC or MAE 205 at CSULB; Math 190, 191, 220; Physics 1A-1B-1C; *Engineering 9\**, CADD 49 at ECC or MAE 172 at CSULB

**Biomedical and Clinical Engineering:** Physiology 31, Chemistry 1A, Math 190, 191, 220, ECHT 130, Computer Science 1, Physics 1A-1B-1C-1D

**Chemical Engineering:** Chemistry 1A, 1B, Computer Science 10\* at ECC or CHE 210 at CSULB; one course from Chemistry 251 taken at CSULB or Microbiology 33 at ECC or Biology 102 at ECC; Math 190, 191, 220; Physics 1A-1B-1C; *Engineering 9\**

**Civil Engineering:** Chemistry 1A; Computer Science 10\* at ECC or CHE 206 at CSULB; Math 190, 191, 220; Physics 1A-1B-1C; Biology 10 or Microbiology 33; *Engineering 9\**, CADD 49 at ECC or MAE 172 at CSULB

**Computer Engineering:** Computer Science 1, 2; Math 190, Physics 1A-1B-1C (Physics 1B-1C has a Math 191 prerequisite)

**Construction Engineering Management:** Physics 2A-2B or 3A-3B; CEM 201 or Accounting 201 at CSULB or Business 1A and 1B at ECC; Math 122 at CSULB or Math 190 at ECC; Architecture 150A

**Electrical Engineering:** Computer Science 1; ECHT 130; Math 190, 191, 220; Physics 1A-1B-1C-1D

**Mechanical Engineering:** Chemistry 1A; Math 190, 191, 220; Physics 1A-1B-1C; Computer Science 10\* at ECC or MAE 205 at CSULB; *Engineering 9\**; CADD 49 at ECC or MAE 172 at CSULB

**Technical and Engineering Education:** Art 29ab, 146abcd, Computer Science 1, 2, 3, Architecture 150A, CADD 5, Math 190, MTT 46, Physics 2A-2B or 3A-3B

**Additional Engineering options available in Audio, Industrial-Management, Materials**

### **CALIFORNIA STATE UNIVERSITY, LOS ANGELES** (2008-2009) [www.calstatela.edu/academic/enr/tmp/et/](http://www.calstatela.edu/academic/enr/tmp/et/)

**Requirements for all Options:** English 1C; Engineering 1; Chemistry 1A; Math 190, 191, 220, 270; Physics 1A-1B-1C-1D

**Civil Engineering:** Strongly recommended: Computer Science 10\*, CADD 5

**Electrical and Computer Engineering:** Strongly recommended "C" Programming for Engineers

**Mechanical Engineering:** Strongly recommended: Computer Science 10\* or other high-level programming language with department approval from CSULA.

**\*Computer Science 3 & 10 offered fall semester only; Math 210 & Computer Science 30 offered spring semester only.**

**CALIFORNIA STATE UNIVERSITY, NORTHRIDGE** (2008-2009) [www.csun.edu/~ecsdean/degprog.html](http://www.csun.edu/~ecsdean/degprog.html)

**Options in Civil, Electrical, Manufacturing Systems, Mechanical:** Chemistry 1A, Engineering 1 (Engineering 1 not required for Civil) and 9\*, Math 190, 191, 220, 270; Physics 1A and 1C; (Computer Science 30\* (for electrical))

**Option in Computer Engineering:** Computer Science 1, 2, 15P\*; Math 190, 191, 220, 270; Physics 1A-1C; 8 units from: Biology 101, 102, Chemistry 1A, 1B, Physics 1B & 1D:

**Option in Engineering Management:** Chemistry 1A, Math 190, 191, 220, 270, Physics 1A, 1C, Engineering 1, 9

**CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA** (2008-2009) [www.csupomona.edu/~engineering](http://www.csupomona.edu/~engineering)

**For options in Aerospace, Chemical, Civil, Electrical, Industrial, Manufacturing, Mechanical and Materials:**

Chemistry 1A; *Engineering* 9\* (except Electrical); Math 190, 191, 220, 270; Physics 1A, 1B, 1C

**Chemical:** add Chemistry 1B:

**Civil:** add Chemistry 1B; CIS 13; Geospatial and Environmental: no additional courses

**Industrial:** add CADD 5 or CADD 34ABCD; Chemistry 1B; Economics 1 or 2 or 5

**Manufacturing:** add CADD 5 or CADD 34ABCD; Chemistry 1B; Economics 1 or 2 or 5

**For options in Mechanical & Materials:** add Chemistry 1B; CADD 5 or CADD 34ABCD; Economics 1 or 2 or 5

**CALIFORNIA POLYTECHNIC UNIVERSITY, SAN LUIS OBISPO** (2008-2009) <http://ceng.calpoly.edu/>

**NOTE:** students should view SLO's website for additional admissions and selection criteria.

**Requirements for all options:** Chemistry 1A; Math 190, 191, 220, 270; Physics 1A-1B-1C-1D

**Aerospace Engineering:** No additional requirements

**Bioresource and Agricultural Engineering:** add Computer Science 10\*; CADD 5, CADD 10 ABCD; Chemistry 1B; Microbiology 33, Economics 5

**Civil:** add Chemistry 1B; CADD 10abcd and 49; Geology 1

**Computer Engineering:** Add Chemistry 1B; Computer Science 1 or 3\*; Computer Science 30\*, Math 210

**Electrical:** add Computer Science 1 or 3\*

**General Engineering:** add Computer Science 1 or 3\*; Chemistry 1B

**Environmental:** add Computer Science 10\*; Microbiology 33; Chemistry 1B; Chemistry 21A, 21B or Chemistry 212 at SLO

**Industrial:** no additional courses

**Manufacturing:** add Welding 1; Chemistry 1B

**Materials Engineering:** add Computer Science 1 or 3\* or 10\*; Chemistry 1B

**Mechanical:** add Computer Science 10\*; ME 152 at Cal Poly or CADD 5 & 47 at ECC; Chemistry 1B; Welding 1

**Software:** add Computer Science 1 or 3; Computer Science 30, Math 210, Psychology 5, Chemistry 1B

**UNIVERSITY OF CALIFORNIA, BERKELEY** (2008-2009) [www.coe.berkeley.edu](http://www.coe.berkeley.edu)

Admission to the College of Engineering is highly competitive. Selection is based on high GPA, completion of prerequisites and specified options, and the essay. Applicants should have at least 80% of the lower division courses completed by the end of the spring semester prior to fall transfer. It is recommended that students have an Introduction to Engineering course. The College of Engineering at Berkeley admits students by major and does not consider students for an alternate major. Summer courses will not be considered for "work in progress" for fall selection. The college of engineering requires six humanities/social science courses, two of which are English Composition courses. Please refer to [www.assist.org](http://www.assist.org) for more detailed transfer information.

**Core Courses required of all junior level transfer students:**

English 1A and 1B (Chemical Engineering will accept English 1B or 1C); Math 190, 191, 220, 270; Physics 1A, 1B, 1C; Chemistry 1A (optional for EECS major--see below); one introductory course in computer programming (i.e. C, C++, or Java); If a sequence is listed for math, physics, chemistry, biology or English, the entire series needs to be complete. No partial credit will be given.

**Bioengineering:** add Biology 101 & 102 & 103; Chemistry 7A & 7B; CS 2 & 30

**Bioengineering/Materials Science and Engineering:** add Biology 101 & 102 & 103; Chemistry 7A & 7B

**Chemical:** add Chemistry 1B; Physics 1D. Recommended Chemistry 7A & 7B with a score in the 75<sup>th</sup> percentile or higher on the American Chemical Society Exam will constitute completion of Chemistry 112A-112B or Berkeley's Chemistry 112A-112B; **NOTE:** Chemical Engineering is housed under the College of Chemistry, therefore, IGETC should be completed by the end of spring prior to fall transfer.

**Chemical Engineering/Materials Science and Engineering:** add Chemistry 1B; Physics 1D

**Chemical Engineering/Nuclear Engineering:** add Chemistry 1B; Physics 1D

\*Computer Science 3 & 10 offered fall semester only; Math 210 & Computer Science 30 offered spring semester only.

**UNIVERSITY OF CALIFORNIA, BERKELEY (CONTINUED)**

**Civil:** add one course from Physics 1D or Chemistry 1B

**Computational Engineering Science:** add Math 210\*; Chemistry 1B; Computer Science 2, 30\*; three additional science courses from: Biology 101 & 102 & 103; Chemistry 1D, 7A-7B

**Electrical Engineering and Computer Science:** add Math 210, Computer Science 2, 30\* and one course from Physics 1D or Chemistry 1A or Physiology 31 or entire Biology sequence Biology 101 & 102 & 103

**Environmental:** add Biology 101 & 102 & 103 at ECC; three science elective from Chemistry 1B, 7A, 7B, Physics 1D, Geology 1 & 3 or Geology 2 & 4

**Industrial and Operations Research:** no additional courses

**Manufacturing:** no additional courses

**Materials Science and Engineering:** add Chemistry 1B; Physics 1D

**Mechanical:** no additional courses

**Nuclear Engineering:** add Physics 1D

**UNIVERSITY OF CALIFORNIA, IRVINE** (2008-2009) [www.eng.uci.edu](http://www.eng.uci.edu)

Preference will be given to junior-level applicants with the highest grades overall, and who have completed as many of the lower-division degree requirements as possible prior to transfer.

**Requirements for all options:** Chemistry 1A (except Computer and General Engineering)); Math 190, 191, 220, 270;

**Aerospace:** add Chemistry 1B; Computer Science 10\*; *Engineering 9\**; Physics 1A-1B-1C-1D

**Biomedical Engineering:** add CS 3; Math 150 or Psychology 9A or Sociology 109; Chemistry 1B; Physics 1A-1B-1C-1D

**Biomedical Engineering/Pre-medical:** add Biology 101-102-103; CS 3; Chemistry 1B, 7A, 7B; Physics 1A-1B-1C-1D

**Civil:** add Physics 1A-1C; Chemistry 1B; Computer Science 3\*; *Engineering 9\**. Students must choose one of the following specializations: General Civil Engineering, Structural Engineering, Transportation Systems Engineering, Environmental Engineering Hydrology and Water Resource Engineering

**Chemical:** add Chemistry 1B, 7A, 7B; Computer Science 10\*; Physics 1A, 1C

**Computer:** add Computer Science 2, 3\*, 30\*; Mathematics 210; Physics 1A-1B-1C-1D

**Electrical:** add Physics 1A-1B-1C-1D

**Environmental:** add Chemistry 1B, 7A; Computer Science 3\* or 10\*; *Engineering 9\**; Physics 1A-1C

**General Engineering:** add *Engineering 9\**; Physics 1A-1C

**Materials Science:** add Chemistry 1B; Computer Science 10\*; *Engineering 9\**; Physics 1A-1B-1C-1D; add one additional course from: Chemistry 7A, Biology 101 and 102, Math 150

**Mechanical:** add Computer Science 10\*; Chemistry 1B; *Engineering 9\**; Physics 1A-1B-1C-1D

**UNIVERSITY OF CALIFORNIA, LOS ANGELES—SEE GUIDESHEET FOR UCLA SCHOOL OF ENGINEERING AND APPLIED SCIENCES.**

**UNIVERSITY OF CALIFORNIA, RIVERSIDE** (2008-2009) [www.engr.ucr.edu/](http://www.engr.ucr.edu/)

Students accepted fall quarter only. Consult the current UC Riverside catalog or ASSIST for information on additional general education breadth requirements. IGETC is an accepted as meeting the college's breadth for transfer students.

**Requirements for all options:** Chemistry 1A; Computer Science 1; English 1A, and 1B or 1C or Philosophy 5 or Psychology 3; Math 190, 191, 220, 270; Physics 1A-1B-1C

**Options available:** **Bioengineering, Biochemical, Chemical, Computer, Electrical, Environmental, Mechanical**

**Biochemical:** no additional courses; **Bioengineering:** add Biology 101; Chemistry 1B; Chemistry 7A-7B **Chemical:** add Biology 102; Chemistry 1B; Chemistry 7A-7B; **Computer:** Add CS 1, 2, 30\*; Math 210; Biology 10 or 102; **Electrical:** add Biology 10 or 102; *Engineering 9\**; **Environmental:** add Biology 102; Chemistry 1B; Chemistry 7A-7B; *Engineering 9\**; **Mechanical:** Add Biology 102; Chemistry 1B; *Engineering 9\**; CADD 5 or 10abcd (subject credit only, no UC transfer credit)

**UNIVERSITY OF CALIFORNIA, SAN DIEGO** (2008-2009) [www.jacobsschool.ucsd.edu/](http://www.jacobsschool.ucsd.edu/)

Transfer students should complete as many preparatory courses before transferring to UCSD.

**Requirements for all options:** Math 190, 191, 220, 270; Physics 1A, 1B, 1C; Chemistry 1A; select one course from: CS 1 or 2 or 3\* or 30\* or Math 210

**Aerospace Engineering:** no additional courses

**Bioengineering:** add Chemistry 1B; CS 1 or 10 or 30

**Chemical Engineering:** add Chemistry 1B, 7A

**Computer Engineering:** Chemistry 1A not required; add CS 2, 3\*, 30\*; Physics 1D; Math 210

\*Computer Science 3 & 10 offered fall semester only; Math 210 & Computer Science 30 offered spring semester only.

**UNIVERSITY OF CALIFORNIA, SAN DIEGO (CONTINUED)** (2008-2009) [www.jacobsschool.ucsd.edu/](http://www.jacobsschool.ucsd.edu/)

**Electrical Engineering:** add Physics 1D

**Engineering Physics:** add Physics 1D

**Environmental Engineering:** add Chemistry 1B, 7A

**Mechanical Engineering:** add Chemistry 1B

**Structural Engineering:** no additional courses

**UNIVERSITY OF CALIFORNIA, SANTA BARBARA** (2008-2009)

**Requirements for all options:** Math 190, 191, 220, 270; Physics 1A, 1B, 1C, 1D; Chemistry 1A, 1B

**Chemical Engineering:** add Chemistry 7A-7B

**Electrical Engineering:** add Computer Science 2

**Mechanical:** add Engineering 9

**LOYOLA MARYMOUNT UNIVERSITY** (2008-2009) <http://www.lmu.edu/Page27422.aspx>

**Requirements for all options: Civil, Electrical, and Mechanical:** Chemistry 1A; Math 190, 191, 220, 270; Physics 1A-1C; Engineering 9\*;  
**Electrical Engineering with an emphasis in Computer Engineering:** add CS 2, 3\*

**UNIVERSITY OF SOUTHERN CALIFORNIA** —SEE USC TRANSFER GUIDE FOR ENGINEERING MAJOR.

\*Computer Science 3 & 10 offered fall semester only; Math 210 & Computer Science 30 offered spring semester only.