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 an engineering counselor or review articulation agreements via the Internet at www.assist.org. You may also consult with the Articulation Officer for specific articulation agreements.

NOTE: Engineering majors are competitive; students 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 is offered fall semester only; Math 210 & Computer Science 30 is offered spring semester only; Engineering 9, students should check with the department.**

Transfer Requirements: (IGETC is NOT Recommended)

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 (2013-2014) www.fullerton.edu/ecs/
Requirements for all Options: Math 190, 191, 220, 270; Physics 1A-1B-1C
Computer Engineering: add Biology 10; Computer Science 1, 2; Math 210*; Physics 1D
Electrical Engineering: add Biology 10: Chemistry 4; Physics 1D
Civil Engineering: add Biology 10; Chemistry 4; Engineering 9
Mechanical: add Chemistry 1A; *Engineering 9**
Emphases available in Architectural Engineering (under civil engineering)

CALIFORNIA STATE UNIVERSITY, LONG BEACH (2014-2015) www.csulb.edu/colleges/coe
NOTE: Engineering students may be able to waive 3 units on the CSU general education pattern from Life Science, Area B 1or Area E (except Biomedical and Clinical Engineering, Chemical, Civil, Computer Science).
Aerospace Engineering: Chemistry 1A; Math 190, 191, 220; Physics 1A-1B-1C; Engineering 1 and 9*; Computer Aided Design/Drafting (CADD) 43
Biomedical and Clinical Engineering: Physiology 31 or Anatomy and Physiology 34A and 34B, Chemistry 1A, Math 190, 191, 220, Physics 1A-1B-1C-1D
Chemical Engineering: Chemistry 1A, 1B; Math 190, 191, 220; Physics 1A-1B-1C; Engineering 1
Civil Engineering: Chemistry 1A; Math 190, 191, 220; Physics 1A-1B-1C; Biology 10 or Microbiology 33; Engineering 1 and 9*; CADD 43
Computer Engineering: Math 190, 191, 220, 270; Physics 1A-1B-1C; Computer Science 3*; Engineering 1; one course from Biology 10 or Chemistry 1A or Physics 1D
Construction Engineering Management: Physics 2A-2B or 3A-3B or 1A-1C; CEM 201 or Accounting 201 at CSULB or Business 1A at ECC; Math 190 and 150; Architecture 150A; Law 5**;** Engineering 1
Electrical Engineering: Math 190, 191, 220; Physics 1A-1B-1C-1D; Engineering 1
Mechanical Engineering: Chemistry 1A; Math 190, 191, 220; Physics 1A-1B-1C; Engineering 1 and 9*; Engineering Technology (ETEC) 16; CADD 43

CALIFORNIA STATE UNIVERSITY, LOS ANGELES (2013-2014) www.calstatela.edu/academic/engr/tmp/et/
Requirements for all Options: English 1C; Engineering 1; Chemistry 1A; Math 190, 191, 220, 270; Physics 1A-1B-1C-1D
Civil Engineering: CADD 5, Engineering 9*
Electrical: Computer Science 1
Engineering: Interdisciplinary: options in Manufacturing, Environmental and Rehabilitation: add Engineering 9
Mechanical Engineering: *Engineering 9**.

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

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE (2013-2014) www.csun.edu/~ecsdean/degprog.html
Option in Civil Engineering: Biology 101 or Geology 1; Chemistry 1A; Engineering 9; Math 190, 191, 220, 270; Physics 1A and 1C
Options in Electrical, Manufacturing Systems, Mechanical: Chemistry 1A, Engineering 1 and 9*, Math 190, 191, 220, 270; Physics 1A and 1C; (Computer Science 30* (for electrical))
Option in Computer Engineering: Computer Science 1, 2; Math 190, 191, 220, 270; Physics 1A, 1C; 6 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 (2013-2014) www.csupomona.edu/~engineering
For options in Aerospace, Chemical and Materials, Civil, Electrical, Industrial, Manufacturing, Mechanical: Chemistry 1A; *Engineering 9** (except Electrical and Computer); Math 190, 191, 220, 270; Physics 1A, 1B, 1C
Chemical and Materials: add Chemistry 1B:
Civil: add Chemistry 1B; CIS 13; Engineering 1; CADD 7
Industrial: add CADD 5 or ETEC 12; Chemistry 1B; Economics 1 or 2 or 5
Manufacturing: add CADD 5 or ETEC 12; Chemistry 1B; Economics 1 or 2 or 5; ETEC 16
For options in Mechanical: add Chemistry 1B; CADD 5 or ETEC 12; Economics 1 or 2 or 5

CALIFORNIA POLYTECHNIC UNIVERSITY, SAN LUIS OBISPO (2013-2014) 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; (please note: see software engineering below)
Aerospace Engineering: no additional courses
Biomedical: Biology 102, Chemistry 1B; Microbiology 33
Bioresource and Agricultural Engineering: add CADD 5, CADD 7; Chemistry 1B; Microbiology 33, Economics 1 or 5
Civil: add Chemistry 1B; Geology 1
Computer Engineering: Add Chemistry 1B; Computer Science 1 or 3*; Computer Science 30*, Math 210
Electrical: add Computer Science 1 or 3*; 9 units from: Biology 10, Chemistry 1B, Chemistry 21A, Chemistry 21B, Computer Science 30, Math 210*, Engineering 9
General Engineering: add Computer Science 1 or 3*; Chemistry 1B; Geology 1, 3
Environmental: add Microbiology 33; Chemistry 1B; Chemistry 21A and 21B or Chemistry 212 at SLO
Industrial: add Psychology 5
Manufacturing: add Chemistry 1B
Materials Engineering: add Chemistry 1B, 7A, 7B; Law 5; Economics 2; Geology 1; Geography 1
Mechanical: add Chemistry 1B
Software: add Computer Science 1 or 3*; Computer Science 30*; Math 210*, Psychology 5, Chemistry 1A, 1B or Physics 1A, 1B, 1C, 1D, Biology 10 or 102 or 8 or Microbiology 33

UNIVERSITY OF CALIFORNIA, BERKELEY (2013-2014) www.coe.berkeley.edu
Admission to the College of Engineering is highly competitive. Applicants must complete **all required** UCB preparation courses listed on www.assist.org to be eligible for admission. Required courses for admission to the major must be completed by the end of spring semester (not summer) prior to fall enrollment. Summer courses will not be considered as "work in progress" for fall selection. If a series of courses at a community college is required (i.e. Physics), **all** courses in the series **must** be completed at the **same** community college.

Recommend early completion of English courses. The average GPA of admitted transfer applicants is 3.8. UCB Engineering does not accept IGETC for admission requirements; they require six humanities/social science courses, two of which are the English Composition courses, English 1A and 1B. Strong applicants have completed all required courses, strongly recommended courses, strong GPA overall and in major courses (A's and B's in major course are critical at Berkeley), demonstrated interest and/or work experience in the intended major, outstanding accomplishment or co-curricular activities, other activities, or personal circumstances outside of academics, and demonstrated organizational skills, leadership, and teamwork.

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); 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. Highly recommended: one introductory course in computer programming (i.e. C++ or Java)

UNIVERSITY OF CALIFORNIA, BERKELEY (CONTINUED)

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

Bioengineering/Materials Science and Engineering: add Biology 101 & 102 & 103; Chemistry 7A, (7B recommended)

Chemical: add Biology 101, 102, 103; Physics 1D. Chemistry 1B, Chemistry 7A & 7B with a combined score in the 75th percentile or higher on the American Chemical Society Exam will constitute completion of Berkeley's Chemistry 112A-112B; **NOTE**: IGETC, although not required, will fulfill the Reading and Composition requirement; however, you must complete the **entire** IGETC pattern by the spring term preceding fall enrollment at Berkeley.

Chemical Engineering/Materials Science and Engineering: add Chemistry 1B, 7A, 7B with a combined score in the 75th percentile or higher on the American Chemical Society Exam will constitute completion of Berkeley's Chemistry 112A-112B; Physics 1D; **NOTE**: Chemical Engineering is housed under the College of Chemistry, IGETC, although not required, will fulfill the Reading and Composition requirement; however, you must complete the **entire** IGETC pattern by the spring term preceding fall enrollment at Berkeley.

Chemical Engineering/Nuclear Engineering: add Chemistry 1B; Physics 1D; **NOTE**: Chemical Engineering is housed under the College of Chemistry IGETC, although not required, will fulfill the Reading and Composition requirement; however, you must complete the **entire** IGETC pattern by the spring term preceding fall enrollment at Berkeley.

Civil: add one course from Physics 1D or Chemistry 1B; Biology 101, 102, 103

Electrical Engineering and Computer Science: add 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 three science electives from Biology 101 & 102 & 103, Chemistry 1B, 7A, 7B, Physics 1D, Geology 1 & 3 or Geology 2 & 4

Industrial and Operations Research: add Computer Science 30*

Materials Science and Engineering: add Physics 1D, Chemistry 1B

Mechanical: no additional courses

Nuclear Engineering: add Physics 1D

UNIVERSITY OF CALIFORNIA, IRVINE (2013-2014) www.eng.uci.edu

*Preference will be given to junior-level applicants with the highest grades overall, and who have completed the following lower-division degree requirements prior to transfer (multivariable calculus, one year of calculus based physics to include mechanics, electricity, and magnetism with labs Physics 1A and 1C), one year of chemistry with labs, one course in computational methods (FORTRAN, C, C++), and one or two additional courses for the major (check assist.org).

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

Aerospace: add Biology 101-102 or Chemistry 1B; *Engineering 9*; Physics 1A-1B-1C-1D; Economics 2

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

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

Civil: add Physics 1A, 1C; Chemistry 1B; Computer Science 2, 3*, 30*; *Engineering 9*; Economics 1and 2; one course from Biology 101, 102, Physics 1B or 1D, Oceanography 10, Geology 1.
 Students must choose one of the following specializations: General Civil Engineering, Structural Engineering, Transportation Systems Engineering, Environmental Hydrology and Water Resource Engineering

Chemical: add Chemistry 1B, 7A, 7B; Physics 1A, 1C; Biology 103

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

Computer Science and Engineering: Computer Science 2, 3, & 30; Math 210; Physics 1A, 1C

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

Environmental: add Chemistry 1B, 7A; *Engineering 9*; Physics 1A, 1C; Economics 1, 2

General Engineering: add Physics 1A, Chemistry 1B

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

Mechanical: add Chemistry 1B or Biology 101-102; *Engineering 9*; Physics 1A-1B-1C-1D; Econ 2

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

UNIVERSITY OF CALIFORNIA, RIVERSIDE (2013-2014) 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 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

Bioengineering: add Chemistry 1B, 7A, 7B, Biology 102, Biology 101 or 8 and 11,
Chemical: add Chemistry 1B, Biology 101 and 102; Chemistry 7A, 7B
Computer: add Math 210*; Computer Science 2, 30*; Biology 10 or 102
Electrical: add Computer Science 30; Biology 10 or 102
Environmental: add Chemistry 1B; Biology 102, Chemistry 7A, 7B, Engineering 9*
Materials Science: add Chemistry 1B, 7A; Biology 10 or 102; Engineering 9*
Mechanical: add Chemistry 1B; Biology 102; Engineering 9*; CADD 5 (subject credit only, no UC transfer credit) or 7

UNIVERSITY OF CALIFORNIA, SAN DIEGO (2013-2014) 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*(not required for NANO and Structural Engineering and Sciences)
Aerospace Engineering: no additional courses; Computer Science 1 or 30*
Bioengineering: add Chemistry 1B; Computer Science 1 or 30*; Biology 101-102-103
Bioengineering: Bioinformatics: add Biology 101-102-103; Chemistry 1B, 7A, 7B; Computer Science 2, 3*
Bioengineering: Biotechnology: add Computer Science 1 or 30*; Biology 101-102-103; Chemistry 1B, 7A, 7B
Computer Engineering: Chemistry 1A not required; add Computer Science 2, 3*; Math 210*
Electrical Engineering: add Physics 1D
Electrical Engineering and Society: add Physics 1D, Emphasis in Sociology, Political Science, Economics, or History Studies
Engineering Physics: add Physics 1D, CS not required
Environmental Engineering: add Chemistry 1B, 7A
Mechanical Engineering: add Chemistry 1B
NANO Chemical Engineering: add Chemistry 1B
NANO Engineering: add Physics 1D, Chemistry 1B; Biology 101-102
Structural Engineering: no additional courses, CS not required
Structural Engineering: Engineering Sciences: no additional courses, CS not required

UNIVERSITY OF CALIFORNIA, SANTA BARBARA (2013-2014)
Requirements for all options: Math 190, 191, 220, 270; Physics 1A, 1B, 1C, 1D; Chemistry 1A, 1B
Chemical Engineering: add Chemistry 7A-7B
Computer Engineering: add Computer Science 1, 2, 30*, 40; Math 210; Chemistry 1B not required
Electrical Engineering: add Computer Science 1, 2, 40
Mechanical: add Engineering 9

LOYOLA MARYMOUNT UNIVERSITY (2013-2014) 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 Computer Science 2, 3* or 4

UNIVERSITY OF SOUTHERN CALIFORNIA —SEE USC TRANSFER PLANNING GUIDE FOR ENGINEERING MAJOR AT www.usc.edu

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