COLLEGE OF ENGINEERING, COMPUTER SCIENCE, & TECHNOLOGY
Civil Engineering

Curriculum for B.S. Degree Civil Engineering (122 units)

CALIFORNIA STATE UNIVERSITY, LOS ANGELES

(Effective Fall 2018 Semester Term)

General Education (21 units)

Lower Division General Education Requirements (21 units)

ENGL 1010	Accelerated College Writing (3); Minimum of C- grade required.
COMM 1100	Oral Communication (3); Minimum of C- grade required.
American Institutions	United States History (3)
American Institutions	United States Constitution and State/Local Government (3)
BLOCK C – Humanities	1 course from C1 Arts (3); Block C2 Humanities met by CE 3010
BLOCK D – Social Sciences	1 course (3)
BLOCK E – Lifelong Understanding	First-time Freshmen: must take ENGR 1500 (3) Transfer Students: 1 course from BLOCK E (3) unless have equivalent credit.

Notes: Blocks A3 and B met in the major. Diversity Requirement (6 units): Students must complete one race/ethnicity (re) course and one diversity course or another race/ethnicity (re) course from American Institutions, Block C, or Block D. Civic learning (cl) requirement met by ENGR 1500 and CE 4960. Writing intensive (wi) requirement is met by CE 3060 and CE 4960.

Upper Division General Education Requirements (0 units)

BLOCK B, C, and D are met in the major; (met by CE 3060; CE 3740; CE 4960; CE 4970)

University Requirement

GWAR	Graduation Writing Assessment Requirement. All CE students must pass the Upper-Division disciplinary Writing Requirement (CE 3060) with a grade of C or better.

Lower Division Major Requirements (46 units)

CHEM 1040	General Chemistry for Engineers (4) *Prerequisites*: Must be Engineering major & have score of 50 or more on (or exemption from) ELM or Math 0930 w/ C or better.
MATH 2110	Calculus I (4) *Prerequisites*: Math 1040 w/ C or better, or MATH 1081 and MATH 1083 both with min. C grade, or MATH 1082 and MATH 1083 with a min. C grade; or satisfactory score on placement examination. Students with a grade of less than B- in either MATH 1040, or in one of MATH 1081 or MATH 1083, or in one of MATH 1082 and MATH 1083, must enroll concurrently in MATH 2111.
MATH 2120	Calculus II (4) *Prerequisites*: MATH 2110 with a minimum C grade; students with a grade of less than B- in MATH 2110 must enroll concurrently in MATH 2121.
MATH 2130	Calculus III (3) *Prerequisites*: MATH 2120 with a minimum C grade; students with a grade of less than B- in MATH 2120 must enroll concurrently in MATH 2131
MATH 2150	Differential Equations (3) *Prerequisites*: MATH 2130
PHYS 2100	General Physics I: Mechanics (5) *Prerequisite*: MATH 2110 with a min. of C grade.
PHYS 2200	General Physics II: Electromagnetism and Circuits (5) *Prerequisites*: PHYS 2100 with a min. of C grade.
CE 1950	Introduction to Civil Engineering Design (2) *Prerequisites*: ENGR 1500, CE 2020, PHYS 2100
CE/ME 2010	Statics (3) *Prerequisites*: MATH 2120, PHYS 2100 both with a minimum of "C" grade.
CE 2020	Plane Surveying (2) *Prerequisites*: MATH 1040; or MATH 1081 and MATH 1083; or MATH 1082 and MATH 1083.
CE/ME 2050	Strength of Materials I (3) Prerequisites: CE/ME 2010 with a minimum of C grade.
CE 2120	Matrix Algebra and Statistics for Engineers (3) *Prerequisite*: Math 2120 with a min. of C grade.
CE/ME 2800	Numerical Methods for Engineers I (1) *Prerequisite*: CE 2120 or MATH 2550.
CE 2840	Environmental Engineering I (1) *Prerequisites*: MATH 2120 and CHEM 1040.
ENGL 2030	Introduction to Technical Writing (3) *Prerequisite*: ENGL 1010 with C- or better.

Natural Science Special Requirement for Civil Engineering (3)

One Course (3 units) from the following list

BIOL 1010	General Biology (3) *Prerequisites*: None
MICR 1010	Introduction to Microbiology (3) *Prerequisites*: None
GEOL 1500	Earth Revealed (3) *Prerequisites*: None
GEOL 1550	Oceanography (3) *Prerequisites*: None
GEOL 1580	Natural Disasters (3) *Prerequisites*: None

Upper Division Major Requirements (38 units)

CE/ME/EE 3000 Economics for Engineers (3) *Prerequisites*: None

CE 3010 Ethics and Professionalism in Civil Engineering (3) *Prerequisites:* Junior standing in civil engineering

CE/ME 3030 Fluid Mechanics I (3) *Prerequisites*: PHYS 2100, CE/ME 2010 with a minimum C grade.

CE 3060 Communication for Civil Engineers (2) *Prerequisites*: ENGL 2030 and COMM 1100; Must attain C or higher to meet the GWAR; wi.

CE/ME 3120 Strength of Materials Laboratory I (1) *Prerequisite*: CE/ME 2050

CE 3140 Hydraulics Laboratory I (1) *Prerequisites*: CE/ME 3030 and PHYS 2200.

CE 3200 Dynamics for Civil Engineers (2) *Prerequisites*: CE/ME 2010 with a minimum grade of C; MATH 2150 and PHYS 2200.

CE 3600 Structural Mechanics I (3) *Prerequisites*: CE/ME 2050 with a minimum grade of C.

CE 3610 Introduction to Structural Design (3) *Prerequisites*: CE 1950, CE 3200, CE 3600.

CE 3660 Geotechnical Engineering I (3) *Prerequisites*: CE/ME 2050 with a minimum grade of C; pre- or co-requisite: CE/ME 3030.

CE 3680 Geotechnical Engineering Laboratory (1) *Prerequisites*: CE 3660, CE/ME 3120.

CE 3700 Transportation Engineering (3) *Prerequisites*: CE 2020.

CE 3740 Civil Engineering Materials (3) *Prerequisites*: CHEM 1040, CE 3120, CE 3610 and CE 3660.

CE/ME 3800 Numerical Methods for Engineers II (2) *Prerequisites*: CE/ME 2800 with a C or better, MATH 2150

CE 3840 Environmental Engineering II (2) *Prerequisites*: CE 2840

CE 3860 Design of Water Resources Systems (3) *Prerequisites*: CE 1950, CE/ME 3030.

Senior Design Requirement (4 units)

The Senior Design requirement is a 2 course series (CE 4960 and CE 4970) that must be completed sequentially. The first series occurs Fall/Spring and the second series occurs Spring/Fall.

CE 4960 Civil Engineering Design Project I (2) *Prerequisites*: CE 3010, 3060, 3610, 3660, 3700, 3800, 3840, 3860, 3000; wi, cl.

CE 4970 Civil Engineering Design Project II (2) *Prerequisites*: CE 4960

Upper Division Technical Electives (10 units)

Select a coherent program of three, 3-unit courses (total of 9 units) of lecture and design electives (DE) from any of the five listed technical areas. A minimum of two courses (6 units) must be design electives (DE). A minimum of 9-units in upper division electives must be taken in residence at Cal State L.A. Select one, 1-unit laboratory elective.

Technical Electives (9 units):

1. Environmental Engineering

CE 3650 Specifications, Cost Estimating and Construction Management (3) *Prerequisites*: Senior standing in engineering

CE 4790 Groundwater Contamination and Remediation (3) *Prerequisite*: CE 3840

CE 4800 Environmental Modeling (3) *Prerequisites:* CE 3800, CE 3840

CE 4840 Environmental Engineering Design (3) (DE) *Prerequisite*: CE 3840

2. Geotechnical Engineering

CE 3650 Specifications, Cost Estimating and Construction Management (3) *Prerequisites*: Senior standing in engineering

CE 4670 Geotechnical Engineering Design I (3) (DE) *Prerequisite*: CE 3660

3. Structural Engineering

CE 3650 Specifications, Cost Estimating and Construction Management (3) *Prerequisites*: Senior standing in engineering

CE 4020 Strength of Materials II (3) Prerequisites: CE/ME 2050, MATH 2150

CE 4600 Structural Mechanics II (3) Prerequisites: CE 3600.

CE 4610 Design of Steel Structures (3) (DE) *Prerequisites*: CE 3600, CE 3610

CE 4620 Reinforced Concrete Design I (3) (DE) *Prerequisites*: CE 3600, CE 3610

CE 4630 Timber and Masonry Design (3) (DE) *Prerequisites*: CE 3600, CE 3610

CE 4650 Seismic Design (3) (DE) *Prerequisites*: CE 3200, CE 3610

4. Transportation Engineering

CE 3650 Specifications, Cost Estimating and Construction Management (3) *Prerequisites*: Senior standing in engineering
CE 4710 Highway Engineering (3) (DE) *Prerequisites*: CE 3700, CE 2020
CE 4720 Highway and Airport Pavement (3) (DE) *Prerequisites*: CE 3680, CE 3700
CE 4740 Traffic Engineering (3) *Prerequisites*: CE 3700
CE 4750 Advanced Geomatics (3) *Prerequisites*: CE 2020, CE 3700

5. Water Resources Engineering

CE 3650 Specifications, Cost Estimating and Construction Management (3) *Prerequisites*: Senior standing in engineering
CE 3870 Hydraulics I (3) *Prerequisites*: CE/ME 3030
CE 4830 Hydrology I (3) *Prerequisites*: CE/ME 3030
CE 4850 Water Supply (3) *Prerequisites*: CE/ME 3030

Laboratory Electives (1 unit):

CE 3720 Asphaltic Materials Laboratory (1) *Prerequisites:* CE/ME 3120
CE 3810 Computer Aided Design Laboratory (1) *Prerequisites:* CE/ME 3030, CE 3610, CE 3700
CE 3820 Computer Aided Struct. Analysis, Design and Experimentation Lab (1) *Prerequisites:* CE/ME 3120, CE 3610
CE 4140 Hydraulics Laboratory II (1) *Prerequisites:* CE/ME 3140; prerequisite or co-requisite: CE 3860
CE 4540L Special Topics in Civil Engineering (1) *Prerequisites: Senior standing in engineering; enrollment subject to approval of instructor in charge.*
CE 4730 Pavement Design Laboratory (1) *Prerequisites:* CE/ME 3120
CE 4990 Undergraduate Directed Study (1-3) *Prerequisites:* Senior standing in civil engineering.