COLLEGE OF ENGINEERING, COMPUTER SCIENCE, & TECHNOLOGY
Civil Engineering

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

CALIFORNIA STATE UNIVERSITY, LOS ANGELES

(Effective Fall 2024 Semester Term)

General Education (21 units)

Lower Division General Education Requirements (21 units)

ENGL 1010	Accelerated College Writing (3)
COMM 1100	Oral Communication (3)
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 ENGR 3010
BLOCK E – Lifelong Understanding	First-time Freshmen: must take ENGR 1500 (3) Transfer Students: 1 course from BLOCK E (3) unless have equivalent credit.
BLOCK F – Ethnic Studies	1 course (3)

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 lower or upper division courses satisfying GE requirements. Civic learning (cl) requirement met by ENGR 1500 and CE 4970. Writing intensive (wi) requirement is met by CE 3060 and CE 4970.

Upper Division General Education Requirements (0 units)

BLOCK B, C, and D are met in the major; (met by CE 3060; CE 3740; CE 3860; 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 (41 units)

CHEM 1040	General Chemistry for Engineers (4) *Prerequisites*: Must be Engineering major; completion of MATH 2110.
MATH 2110	Calculus I (4) *Prerequisites*: Grade of C or better in either MATH 1040 or (MATH 1081 and MATH 1083) or (MATH 1082 and MATH 1083) or (ESM 1082 and MATH 1083); or scored satisfactorily on a math placement examination. Students with a grade of less than B- in any of the listed prerequisites 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 (4) *Prerequisite*: MATH 2110 with a grade of C or better.
CE 1900	Introduction to Computer Aided Design for Civil Engineers (1)
CE 2900	Fundamentals of Civil Engineering Design (2) *Prerequisites*: CE 1900, CE 2020
CE/ME 2010	Statics (3) *Prerequisites*: MATH 2120, PHYS 2100 both with a grade of C or better.
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 grade of C or better.
CE 2120	Matrix Algebra and Statistics for Engineers (3) *Prerequisite*: MATH 2120 with a grade of C or better.
CE/ME 2800	Numerical Methods for Engineers I (1) *Prerequisite*: MATH 2110 with a grade of C or better.
CE 2840	Environmental Engineering I (1) *Prerequisites*: 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 45 units)

CE/ME/EE 3000 Economics for Engineers (3) *Prerequisite*: Junior or senior standing in civil engineering.

ENGR 3010 Ethics and Professionalism in Engineering (3) *Prerequisite:* Junior or senior standing in civil engineering.

CE/ME 3030 Fluid Mechanics I (3) *Prerequisites*: PHYS 2100 and CE/ME 2010 both with a grade of C or better.

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 (3) *Prerequisites*: CE/ME 2010 with a grade of C or better and MATH 2150

CE 3220 Statistics and Data Analysis for Engineers (2) *Prerequisites*: CE 2120

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

CE 3610 Introduction to Structural Design (3) *Prerequisites*: CE 2900, CE 3200, CE 3600.

CE 3650 Fundamentals of Construction Management (3) *Prerequisite*: Junior or senior standing in civil engineering.

CE 3660 Geotechnical Engineering I (3) *Prerequisites*: CE/ME 2050 with a grade of C or better; 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 grade of C or better, (CE 2120 and MATH 2150) or MATH 2190

CE 3840 Environmental Engineering II (3) *Prerequisites*: CE 2840 and MATH 2110 with a grade of C or better.

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

Senior Design Requirement (2 units)

The Senior Design requirement can be completed in either Fall or Spring semester.

CE 4970 Civil Engineering Design Project I (2) *Prerequisites*: ENGR 3010, CE 3000, 3060, 3610, 3650, 3660, 3700, 3800, 3840, 3860. wi, cl.

Upper Division Technical Electives (10 units)

Complete 10 units, with at least one course (3 units) from Design Electives (DE) and one course from Laboratory Electives.

Technical Electives (9 units):

1. Construction Management

CE 4560 Construction Project Planning, Scheduling, and Control (3) *Prerequisites:* CE 3650

CE 4570 Construction Cost Estimation & Financial Management (3) *Prerequisites*: CE 3650

2. Environmental Engineering

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

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

CE 4810 Environmental Sustainability and Renewable Energy (3) *Prerequisites:* Junior or senior standing in civil engineering and MATH 2110

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

3. Geotechnical Engineering

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

4. Structural 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 3610

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

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

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

5. Transportation Engineering

CE 4710 Highway Engineering (3) (DE) *Prerequisites*: CE 2020, CE 3700

CE 4720 Highway and Airport Pavement Design (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

6. Water Resources Engineering

CE 4830 Hydrology I (3) *Prerequisites*: CE/ME 3030

CE 4870 Hydraulics I (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 civil 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.