BS IN CIVIL ENGINEERING

In Workflow

1. CE Committee Chair (fogarty@csus.edu)
2. CE Chair (merayyan@csus.edu)
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Approval Path

1. 2026-09-28T23:16:40Z
   Julie Fogarty (fogarty): Approved for CE Committee Chair
2. 2026-09-29T20:27:58Z
   Saad Merayyan (merayyan): Approved for CE Chair
3. 2026-10-16T16:57:24Z
   Tongren Zhu (tongren.zhu): Approved for ECS College Committee Chair
4. 2026-10-16T16:59:53Z
   Behnam Arad (arad): Approved for ECS Dean

History

1. May 2, 2018 by clmig-jwehrheim
2. Mar 4, 2019 by Julie Fogarty (fogarty)
3. Apr 18, 2019 by 212408496
4. Feb 24, 2020 by Julie Fogarty (fogarty)
5. Apr 28, 2020 by 220267334
6. May 12, 2020 by Janett Torset (torsetj)
7. Mar 26, 2021 by Julie Fogarty (fogarty)
8. Apr 20, 2021 by 220267334
9. Aug 25, 2021 by Janett Torset (torsetj)
10. Jan 27, 2022 by Katie Dickson (katiedickson)
11. Aug 4, 2022 by 302822325
12. Aug 10, 2022 by 302822325
13. Mar 6, 2024 by Julie Fogarty (fogarty)

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Viewing: BS in Civil Engineering

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Changes proposed by: Julie Fogarty (218645519)

Academic Group: (College)

Engineering & Computer Science

Academic Organization: (Department)

Civil Engineering

Catalog Year Effective:
2027-2028 Catalog

Individual(s) primarily responsible for drafting the proposed degree major program:

Name (First Last)	Email	Phone 999-999-9999
Julie Fogarty	fogarty@csus.edu	916-278-7335

Program Snapshot

Type of Program:
Major

Program Change Type:
Non-Substantive

Title of the Program:
BS in Civil Engineering

Designation: (degree terminology)
Bachelor of Science

Delivery Mode:
Fully Face to Face

Support Mode:
State Support

Please see the CSU/CIP Code Crosswalk: https://www.csus.edu/academic-affairs/curriculum-workflow/_internal/_documents/csu_codes_to_cip.pdf

TMC Templates: https://c-idsystem.org/transfer-efforts/

Will this program require accreditation?
Yes

Anticipated date of accreditation request:
Summer 2027

Provide a clear, concise overview of the program proposal (new or change) and provide a justification. For NEW programs describe the purpose and focus of the program, identify the target student population(s), and highlight key strengths and distinguishing features of the program.
Proposed program changes are intended to maximize the use of limited units for the major while still delivering the best possible education to future civil engineers made at Sac State. There is no overall change of units to the program. We are merely shifting around the requirements to effectively meet accreditation standards and skills needed by our students to succeed as future practicing civil engineers.

Action (Unit count)
1) Remove PHYS 11C (-4 units)
2) Add one unit to CE 100 (+1 units)
3) Add CE Elective (+3 units)
4) Remove CE 151 (-2 units)
5) Replace CE 150 with CE 150T (+1 unit)
6) Add CE 1L: Introduction to Civil Engineering Lab (+1 unit)
7) Shift CE 1 to junior year in flowchart and revise content (0 units).
8) Shift CE 101 to lower division CE 10 (0 units)
Entire Package (0 unit net change)

1, 2, & 3) PHYS 11C is not a prerequisite course to any other course in the major. Students often end up putting it off until their senior year for this reason. While we appreciate the general knowledge provided to future engineers from this course, with the limited units we have available, we think students would be better prepared for their professional careers with an extra unit of engineering geology (CE 100) and an opportunity to explore deeper in a civil engineering sub-discipline through an extra CE elective. CE 100 will change from a 2 unit course to a 3 unit course to incorporate natural hazards and relevant sustainability concepts.

4 & 5) Transition of CE 150 (2 unit lecture)/CE 150L (1 unit lab) & CE 151 (2 unit lecture) sequence (5 units) back to a CE 150T (3 unit lecture) and CE150L (1 unit lab). This is consistent with the four other sub-discipline core courses that are covered by the civil engineering major which consist of a 3 unit lecture and 1 unit lab. The splitting and addition of a unit in a past curriculum revision was for two reasons: 1) to address high DFW rates in the environmental engineering course and 2) to add in sustainability concepts encouraged by the accrediting body (ABET) and profession (American Society of Civil Engineers). The high DFW was attributed to the large gap between when students took chemistry (CHEM 1E) and environmental engineering. The updated flow chart in this proposal shifts CHEM 1E to a one or two semester gap as opposed to a 5 or 6 semester gap. Sustainability concepts will be incorporated into CE 1, CE 1L, and CE 100. Using number CE 150T to transition course from 2 units to 3 units. We will need to offer the 2 unit version to students on old catalogs for AY 27-28 as we transition everyone else to the new 3 unit version. After the last offering of CE 150 & CE 151 is needed for student catalog rights, we will deactivate both and rename CE 150T to CE 150. A transition plan has been developed and targeted advising will occur pending Spring 2027 enrollment as to which course version students should take to meet the required 124 units to complete their degree.

6 & 7) CE 1 currently serves both freshmen and transfer students entering the major. These two groups have disparate needs that could be better addressed through a two course sequence - CE 1L for native students interested in learning more about the major and CE 1 for transfers & native students at the junior level. CE 1L will provide hands-on activities, CE lab visits, and visits to field sites on or near campus (i.e. E.A. Fairbairn Water Treatment Plant on the west edge of campus, Sac State low impact developments, etc.) to get students excited about a career in civil engineering as they're working their way through difficult lower division math and science courses. CE 1 will meet native students at the junior level and those transferring in already thinking they want to complete their degree in civil engineering with content that will support them in their efforts to choose appropriate electives for their career aspirations, consider graduate school, prepare for internships, understand the professional licensure path while interacting with our strong industry connection through a handful of guest speakers/roundtable discussions.

8) Transition of CE Computer Applications course (CE 101) to lower division (CE 10). This is beneficial to students in that it provides them with programming and data analytics skills earlier, which are used in more advanced courses and which students can bring into subsequent internships, making them more competitive earlier in their internship searches. Shifting this course to lower division also balances the removal of a lower division course (PHYS 11C) being replaced by upper division units (CE 100 and CE Elective) for transfer students trying to get through in two and native students taking reasonable units each semester to finish in four.

Other editorial changes: updated GE Requirements to new pattern. For some reason, English Composition II was listed as satisfied by a required course in the major. CE students historically have taken the required ENGL 20 course so I made it explicit that it is not covered by the major. That was updated in the table and there are still 30 units of General Education and Graduate Requirements needed for students to complete their degree like in the previous catalogs. Cleaned up language on footnotes for multiple tables to be consistent with formatting changes (i.e. we used to list our electives in course number order with footnote 5 designating design and switched it in a prior revision to a list of Design and list of Technical courses to make it clearer for students, but failed to clean up those footnotes).

University Learning Goals

Undergraduate Learning Goals:

Competence in the disciplines
Knowledge of human cultures and the physical and natural world
Intellectual and practical skills
Personal and social responsibility
Integrative learning

Will this program be required as part of a teaching credential program, a single subject, or multiple subject waiver program (e.g., Liberal Studies, Biology) or other school personnel preparation program (e.g., School of Nursing)?

No

Curriculum Alignment and Assessment

Program Learning Outcomes

Provide measurable, program-specific learning outcomes that reflect the most important competencies students will demonstrate upon completion of the program. Programs are expected to assess and use PLOs for continuous improvement.

Program Learning Outcomes

Learning Outcome
1) Ethically apply their hands-on, practice-oriented civil engineering education to succeed professionally;
2) Engage in lifelong learning through graduate education, professional development, and/or active involvement in professional organizations; and
3) Communicate effectively on multi-disciplinary teams to address diverse challenges, creating solutions that serve the general public.

Learning Outcomes Display

Course Code	PLO 1	PLO 2	PLO 3
CE 1L			
CE 4			
MATH 30			
CE 9			
CE 9L			
MATH 31			
PHYS 11A			
MATH 45			
ENGR 30			
CE 101			
CHEM 1E			
ENGR 45			
ENGL 20			
MATH 35			
MATH 100			
CE 1			
ENGR 110			
ENGR 112			
ENGR 115			
ENGR 132			
CE 100			
CE 130			
CE 130L			
CE 150T			
CE 150L			
CE 160			
CE 140			
CE 140L			
CE 170			
CE 170L			
CE 190			
CE 160L			
CE 191			
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Catalog Description (catalog copy):

Units required for Major: 94 including GE courses
Total units required for BS: 124

Program Description

Civil Engineering involves the application of scientific principles and knowledge of mathematics and computers to the planning, analysis, design, and construction of all types of private and public works. Reduction of air and water pollution, disposal of hazardous wastes, renewal of our old cities, planning and building of new communities, providing water, power, and high-speed ground transportation systems are the responsibilities of the civil engineer. It is a continual challenge to the civil engineer to provide these services efficiently by the construction of dams, buildings, bridges, tunnels, highways, airports, waterways, and waste handling facilities in harmony with the natural environment.

Because of the broad range of demands on the civil engineer's services, the undergraduate program is devoted to fundamental principles in mathematics; basic and engineering sciences; the spectrum of Civil Engineering practice in both analysis and design; and required courses in the humanities and the social sciences, so that engineers may better relate to the world and society they serve. The upper division program permits students to select 15 units (5 courses) of electives. Students may increase the breadth or depth of their knowledge in Civil Engineering by selecting these electives in several areas: environmental and water quality engineering, geotechnical engineering, structural engineering, transportation, and water resources engineering.

Courses may be interchanged between semesters to accommodate the student's schedule, as long as prerequisites are observed. Civil engineering is a demanding major, but with devoted study it can be completed in four years. Students who are working half-time or more often find it difficult to successfully pass a full load of classes each semester. Such students should plan to take fewer units per semester and a longer time to finish their degree.

Note: Students must satisfy the requirements of the Accreditation Board for Engineering and Technology (EAC/ABET). Consult the Civil Engineering Department Chair for specific General Education requirements.

Note: Students graduating with a BS in Civil Engineering will not be subject to the University's Foreign Language Graduation Requirement. Students who change major may be subject to the University's Foreign Language Graduation Requirement.

Admission and Continuation Requirements (catalog copy): minimum GPA and prerequisites (if applicable), required coursework or preparation, portfolio, test scores, and/or letters of recommendation. For graduate programs: expectations for a relevant bachelor's degree (required or preferred disciplines, prerequisite knowledge, or equivalent experience), include evidence that program requirements conform to the minimum requirements for the culminating experience, as specified in Title 5 Section 40510 The Master's Degree and Section 40511 The Doctoral Degree.

Program Requirements (catalog copy):

Program Requirements

Code	Title	Units
Required Lower Division Courses (64 Units)		
First Semester Freshman Year		
CE 1L	Course CE 1L Not Found	1
CE 4	Engineering Graphics and CAD [1]	2
MATH 30	Calculus I [1]	4
Select three General Education courses		9
Second Semester Freshman Year		
CE 9	Plane and Topographic Surveying	2
CE 9L	Plane and Topographic Surveying Laboratory	1
MATH 31	Calculus II	4
PHYS 11A	General Physics: Mechanics [1]	4
Select two General Education courses		6
First Semester Sophomore Year		
MATH 45	Differential Equations for Science and Engineering	3
ENGR 30	Analytic Mechanics: Statics	3
CE 101	Computer Applications in Civil Engineering	3
Select two General Education courses		6
Second Semester Sophomore Year		
CHEM 1E	General Chemistry for Engineering [1]	4
ENGR 45	Engineering Materials	3
ENGL 20	College Composition II	3
MATH 35 or MATH 100	Introduction to Linear Algebra Applied Linear Algebra	3
Select one General Education course		3
Required Upper Division Courses (60 Units) [2]		

First Semester Junior Year		
CE 1	Civil Engineering Seminar	1
ENGR 110	Analytic Mechanics - Dynamics	3
ENGR 112	Mechanics Of Materials	3
ENGR 115	Statistics For Engineers	3
ENGR 132	Fluid Mechanics	3
CE 100	Engineering Geology	3
Second Semester Junior Year		
CE 130	Water Resources Engineering	3
CE 130L	Hydraulics Laboratory	1
CE 150T	Course CE 150T Not Found	3
CE 150L	Environmental Engineering Laboratory	1
CE 160	Introduction to Structural Analysis [1]	3
Select General Education course		3
First Semester Senior Year		
CE 140	Transportation Engineering	3
CE 140L	Transportation Engineering Laboratory	1
CE 170	Soil Mechanics	3
CE 170L	Soil Mechanics Laboratory	1
CE 190	Civil Engineering Project Skills	3
Select two Civil Engineering electives [3]		6
Second Semester Senior Year		
CE 160L	Structural Laboratory [1]	1
CE 191	Senior Project	3
Select three Civil Engineering electives [3]		9
Total Units		**124**

Civil Engineering Electives

Code	Title	Units
Select at least two design electives from the following: [3]		
Design Electives		
CE 133	Design of Urban Water and Sewer Systems	
CE 134	Open Channel Hydraulics	
CE 141	Traffic Analysis and Design	
CE 144	Geometric Design of Highways	
CE 152	Stormwater Management	
CE 153	Design of Water Quality Control Processes	
CE 163	Structural Steel Design	
CE 164	Reinforced Concrete Design	
CE 165	Masonry Design	
CE 168	Prestressed Concrete Design	
CE 169	Timber Design	
CE 171	Soil Mechanics and Foundation Engineering	
CE 175	Geotechnical Earthquake Engineering	
Technical Electives		
CE 131	Hydrology	
CE 132	Groundwater Engineering	
CE 142	Transportation Systems	
CE 156	Geoenvironmental Engineering	
CE 166	Seismic Behavior of Structures	
CE 182	Introduction to GIS in Civil Engineering	
CE 183	Concrete Technology	
ENGR 124	Thermodynamics	

1 Course also satisfies General Education (GE)/Graduation Requirement.

2 Students must normally complete all lower division preparation before enrolling in upper division Engineering or Civil Engineering courses.

[3] Electives are to be chosen from the list of Civil Engineering Electives in consultation with a faculty advisor and must include at least two design electives.
Note: Other electives, such as a CE 196 series course or CE 199E may be chosen with the approval of a faculty advisor and Department Chair.

General Education Requirements [1]

Code	Title	Units
Area 1: English Communication (6 Units)		
1A - English Composition		3
1B - Critical Thinking		0
1C - Oral Communication		3
Area 2: Mathematical Concepts and Quantitative Reasoning		
Area 2 Course - Lower Division [2]		0
Area 3: The Arts and Humanities (6 Units)		
3A - Arts		3
3B - Humanities		3
Area 4: Social and Behavioral Sciences (6 Units)		
Area 4 Course -Lower Division		3
Area 4 Course - Lower Division		3
Area 5: Physical and Biological Sciences (3 Units)		
5A - Physical Science [2]		0
5B - Biological Science		3
5C - Laboratory [2]		0
Area 6: Ethnic Studies (3 Units)		
Area 6 Course		3
Upper Division Courses: (3 Units)		
Area 3 Course - Upper Division		3
Area 4 Course - Upper Division [2]		0
Area 2 OR Area 5 Course - Upper Division [2]		0
Total Units		**27**

[1] To help you complete your degree in a timely manner and not take more units than absolutely necessary, there are ways to use single courses to meet more than one requirement (overlap). For further information, please visit the General Education page (https://catalog.csus.edu/colleges/academic-affairs/general-education/).
Note: There is no way to list all possible overlaps so please consult with a professional advisor. The Academic Advising Center can be visited online (http://www.csus.edu/acad), by phone (916) 278-1000, or email (advising@csus.edu).
[2] Required in Major; also satisfies GE.

Graduation Requirements [1]

Code	Title	Units
Graduation Requirements (required by CSU) (9 Units)		
American Institutions: U.S. History		3
American Institutions: U.S. Constitution & CA Government		3
Writing Intensive (WI)		3
Graduation Requirements (required by Sacramento State) (6 Units)		
English Composition II		3
Race and Ethnicity in American Society (RE)		3
Foreign Language Proficiency Requirement [2]		0

[1] To help you complete your degree in a timely manner and not take more units than absolutely necessary, there are ways to use single courses to meet more than one requirement (overlap). For further information, please visit the General Education page (https://catalog.csus.edu/colleges/academic-affairs/general-education/).
Note: There is no way to list all possible overlaps so please consult with a professional advisor. The Academic Advising Center can be visited online (http://www.csus.edu/acad), by phone (916) 278-1000, or email (advising@csus.edu).
[2] If not satisfied before entering Sacramento State, it may be satisfied in General Education Area C2 (Humanities). "C- or better required." The alternative methods for satisfying the Foreign Language Proficiency Requirement are described here: https://www.csus.edu/college/arts-letters/world-languages-literatures/foreign-language-requirement.html
Note: Students with a declared major of BS in Civil Engineering are exempt from the Foreign Language Graduation Requirement.

Please attach the Curriculum Overview

2026-09-18 Flowchart AY 2026-2027 Proposed Changes.pdf

Fiscal Impact to Change an Existing Program

Indicate programmatic or fiscal impact which this change will have on other academic units' programs, and describe the consultation that has occurred with affected units:

Removed PHYS 11C as a required course which will impact enrollment in that course. Emailed PHYS chair to inform them of proposed change.

Attach a copy of correspondence with these units:

ConsultationwithPhysics.pdf

Provide a fiscal analysis of the proposed changes:

No impact.

How will the above changes be accommodated within the department/College existing fiscal resources?

Only change is shifting 4 WTU taught by a different department (PHYS 11C) into CE courses (CE 1L, CE Elective - 5 WTU). Our current elective offerings can handle additional enrollment. The extra 2 WTU for CE 1L will be combined with the 1 WTU for CE 1 (currently taught on overload by the department chair each semester) to work as 3 WTU workload and can be accommodated by our current full-time faculty workloads.

Will the proposed changes require additional resources?

No

What additional space, equipment, operating expenses, library, computer, or media resources, clerical/technical support, or other resources will be needed?

None.

Key: 152