CE 10: COMPUTER APPLICATIONS IN CIVIL ENGINEERING

In Workflow

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

1. 2026-09-28T23:16:57Z
   Julie Fogarty (fogarty): Approved for CE Committee Chair
2. 2026-09-29T20:29:09Z
   Saad Merayyan (merayyan): Approved for CE Chair
3. 2026-10-16T16:50:51Z
   Tongren Zhu (tongren.zhu): Approved for ECS College Committee Chair
4. 2026-10-16T16:59:56Z
   Behnam Arad (arad): Approved for ECS Dean

History

1. Mar 4, 2019 by Richard Armstrong (richard.armstrong)
2. Jun 8, 2022 by 302822325

Date Submitted: 2026-09-28T22:42:30Z

Viewing: CE 10 : Computer Applications in Civil Engineering
Formerly known as: CE 101
Last approved: Wed, 08 Jun 2022 14:00:51 GMT
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Changes proposed by: Julie Fogarty (218645519)

Contact(s):

Name (First Last)	Email	Phone 999-999-9999
Amy Wyman	wyman@csus.edu	916-278-6982

Catalog Title:
Computer Applications in Civil Engineering

Class Schedule Title:
Computer Applications CE

Academic Group: (College)
ECS - Engineering & Computer Science

Academic Organization: (Department)
Civil Engineering

Will this course be offered through the College of Continuing Education (CCE)?
No

Catalog Year Effective:
Fall 2027 (2027/2028 Catalog)

Subject Area: (prefix)
CE - Civil Engineering

Catalog Number: (course number)
10

Course ID: (For administrative use only.)
202955

Units:
3

Is the ONLY purpose of this change to update the term typically offered or the enforcement of existing requisites at registration?
No

In what term(s) will this course typically be offered?
Fall, Spring

Does this course require a room for its final exam?
Yes, final exam requires a room

This course complies with the credit hour policy:
Yes

Justification for course proposal:
We are seeking solely to move this class from an upper-division classification to a lower-division classification to encourage students to take the course earlier, changing the course number from CE 101 to CE 10. The proposed change aligns with other proposed program changes. This change 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.

Transfer students will need to be able to apply community college credits for this course when offered at the lower division. We believe this will not be a problem because a similar course for Mechanical Engineering students is offered at a lower division level (ME 76) and has several articulation agreements with community colleges in place for this. There are classes available at the community college level with learning objectives that align with those of CE 10.

Moving this course from upper-division to lower-division also corresponds with a change to prerequisites. ENGR 30 and CE 4 are being removed as prerequisites, and PHYS 11A is being added as a prerequisite. The course does not use content from ENGR 30 and CE 4 and removing them as prerequisites provides students more flexibility with when they take the course. However, it is desired that students have prior math and science problem-solving experience at the college level, specifically experience with breaking down problems into smaller tasks. To address this need, we are adding PHYS 11A as a prerequisite, which is similar to the prerequisites for ME 76.

Course Description: (Not to exceed 90 words and language should conform to catalog copy.)
Development of programming- and algorithm-based problem-solving skills in civil engineering using modern programming and scripting languages and scientific computing programs. Application to numerical methods, data science, and visualization.

Are one or more field trips required with this course?
No

Fee Course?
No

Is this course designated as Service Learning?
No

Is this course designated as Curricular Community Engaged Learning?
No

Does this course require safety training?
No

Does this course require personal protective equipment (PPE)?
No

Does this course have prerequisites?
Yes

Prerequisite:
PHYS 11A

Prerequisites Enforced at Registration?
Yes

Does this course have corequisites?
No

Graded:
Letter

Approval required for enrollment?
No Approval Required

Course Component(s) and Classification(s):
Lecture

Lecture Classification
CS#02 - Lecture/Discussion (K-factor=1WTU per unit)

Lecture Units
3

Is this a paired course?
No

Is this course crosslisted?
No

Can this course be repeated for credit?
No

Can the course be taken for credit more than once during the same term?
No

Description of the Expected Learning Outcomes and Assessment Strategies:

List the Expected Learning Outcomes and their accompanying Assessment Strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers). Click the plus sign to add a new row.

	Expected Learning Outcome	Assessment Strategies
1	Identify and define key programming elements, including values, variables, operators, conditional statements, and iteration statements.	Module examinations Problem sets
2	Decompose a complex problem-solving task into small, clearly-defined tasks.	Module examinations Problem sets Project
3	Translate problem tasks into code and spreadsheet workflows.	Module examinations Problem sets Project
4	Find and implement existing scientific computation and visualization modules for problem solving and data analysis.	Module examinations Problem sets Project
5	Develop user-specific programming function.	Module examinations Problem sets Project
6	Visualize data using programming and spreadsheet analysis skills.	Module examinations Problem sets Project

7	Apply programming and spreadsheet analysis skills to solve numerical engineering and data science problems.	Module examinations Problem sets Project

Attach a list of the required/recommended course readings and activities:

CE10 Syllabus.docx

Is this course required in a degree program (major, minor, graduate degree, certificate?)

Yes

Has a corresponding Program Change been submitted to Workflow?

No

Identify the program(s) in which this course is required:

Programs:
BS in Civil Engineering

Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer)?

No

Will there be any departments affected by this proposed course?

No

I/we as the author(s) of this course proposal agree to provide a new or updated accessibility checklist to the Dean's office prior to the semester when this course is taught utilizing the changes proposed here.

I/we agree

University Learning Goals

Undergraduate Learning Goals:

Competence in the disciplines
Intellectual and practical skills

Is this course 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

Is this a General Education (GE) or Graduation Requirement (GR) course or is it being considered for GE/GR?

Is this a General Education (GE) course or is it being considered for GE?

No

Key: 532