

CE 190A: CIVIL ENGINEERING PROJECT SKILLS

In Workflow

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Approval Path

1. Tue, 02 Oct 2018 05:19:50 GMT
Julie Fogarty (fogarty): Approved for CE Committee Chair
2. Tue, 02 Oct 2018 21:48:07 GMT
Benjamin Fell (fellb): Approved for CE Chair
3. Fri, 19 Oct 2018 16:44:03 GMT
Troy Topping (troy.topping): Approved for ECS Committee Chair
4. Fri, 19 Oct 2018 16:48:45 GMT
Kevan Shafizadeh (kevan): Approved for ECS Dean

New Course Proposal

Date Submitted: Tue, 02 Oct 2018 04:25:33 GMT

Viewing: CE 190A : Civil Engineering Project Skills

Last edit: Fri, 19 Oct 2018 16:43:44 GMT

Changes proposed by: 218645519

Contact(s):

Name (First Last)	Email	Phone 999-999-9999
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Catalog Title:

Civil Engineering Project Skills

Class Schedule Title:

CE Project Skills

Academic Group: (College)

ECS - Engineering & Computer Science

Academic Organization: (Department)

Civil Engineering

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

Will this course be offered through the College of Continuing Education (CCE)?

No

Catalog Year Effective:

Fall 2019 (2019/2020 Catalog)

Subject Area: (prefix)

CE - Civil Engineering

Catalog Number: (course number)

190A

Course ID: (For administrative use only.)

TBD

Units:

3

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

Does this course replace an existing experimental course?

No

This course complies with the credit hour policy:

Yes

Justification for course proposal:

****This Form A should only be approved in conjunction with the Form B and other Form As related to the package outlined in the Form B****

The course proposal is part of a larger curriculum change from the civil engineering department that is designed to prepare students better for subsequent courses and professional practice. This is a proposal for a new course taken the second to last semester of the degree program.

Engineering programs require a senior capstone course as part of the accreditation process, but many of our students are overwhelmed when asked to take what they've learned in all of their specific technical courses and apply it to an actual problem they might see in practice. To address this issue, and put more of the technical content into perspective, we're proposing to merge ENGR 140 (2 units), CE 146 (3 units), and CE 190 (3 units) into two sequential courses, CE 190A (3 units) and CE 190B (3 units). CE 190A will provide the professional setting (or framework) for engineering practice, including work procedures (such as proposals, estimates, and schedules), ethics, and design alternative decision making (including engineering economics). This course will provide students with more project knowledge needed for CE 190B by previewing activities that overwhelm them in the current senior project class, CE190. CE 190B is restructured so that the design project is more manageable, using some content from CE 146 on project management and construction documents.

Course Description: (Not to exceed 80 words and language should conform to catalog copy.)

Introduction to professional engineering practice through case studies of existing projects, including estimating, scheduling, and specifications. Evaluation of design alternatives for engineering projects using principles of engineering economy and cost benefit analysis. Engineering ethics and professional responsibilities.

Are one or more field trips required with this course?

No

Fee Course?

No

Course Note: (Do not include field trip or fee course notations.)

Student must have taken or be registered for 3 of the 5 core civil engineering courses: CE 170A, CE 171A, CE 161, CE 137, and CE 147. This course is intended to be taken in the final year of study before taking CE 190B.

Does this course have prerequisites?

Yes

Prerequisite:

(CE 170A or CE 171A or CE 161 or CE 137 or CE 147) and (CE 170A or CE 171A or CE 161 or CE 137 or CE 147) and (CE 170A or CE 171A or CE 161 or CE 137 or CE 147). CE 170A, CE 171A, CE 161, CE 137, and CE 147 may be taken concurrently.

Prerequisites Enforced at Registration?

Yes

Does this course have corequisites?

No

Graded:

Credit / No Credit

Approval required for enrollment?

Instructor Approval

Course Component(s) and Classification(s):

Lecture

Lecture Classification

CS#04 - Lecture /Recitation (K-factor=1 WTU per unit)

Lecture Units

3

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: Describe outcomes using the following format: "Students will be able to: 1), 2), etc."

Students will be able to:

- 1) Interpret and analyze an engineering design problem statement
- 2) Identify applicable technical and socioeconomic criteria and constraints of civil engineering example projects

- 3) Evaluate several design alternatives of civil engineering example projects
- 4) Identify and explain the features of a civil engineering proposal
- 5) Select specifications to meet design requirements of a specific engineering project
- 6) Perform a take-off and estimate costs for an engineering project
- 7) Explain the role of ethics in professional civil engineering practice
- 8) Describe and apply the principles of engineering economics to engineering design and/or engineering projects

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

F19-CE_190A_01-Draft Syllabus.docx

Assessment Strategies: A description of the assessment strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers) which will be used by the instructor to determine the extent to which students have achieved the learning outcomes noted above.

Students will complete a scaffolded project, other smaller assignments (group and individual) and exams (ELO 1-8).

For whom is this course being developed?

Majors in the Dept

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

Yes

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

Attach Accessibility Checklist: (Optional at submission. Fulfills requirement to file with Dean's office.)

Is this a paired course?

No

University Learning Goals

Undergraduate Learning Goals:

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

GE Course and GE Goal(s)

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

Yes

In which GE area(s) does this apply?

D. The Individual and Society

Which GE objective(s) does this course satisfy?

Find and use common information resources, engage in specialized library research, use computers and seek out appropriate expert opinion and advice.

Use mathematical ideas to accomplish a variety of tasks.

Gain a general understanding of current theory, concepts, knowledge, and scientific methods pertaining to the nature of the physical universe, ecosystems, and life on this planet.

Attach Course Syllabus with Detailed Outline of Weekly Topics:

F19-CE_190A_01-Draft Syllabus.docx

Syllabi must include: GE area outcomes listed verbatim; catalog description of the course; prerequisites, if any; student learning objectives; assignments; texts; reading lists; materials; grading system; exams and other methods of evaluation.

Will more than one section of this course be offered?

Yes

Provide a description of what would be considered common to all sections and what might typically vary between sections:

**Please see below for background information

Instructors will all use the same syllabus, assignments and class projects will be coordinated between sections and instructors to maintain consistency. All learning outcomes will be addressed in all sections. Individual lecture content may vary between sections as instructors deem necessary for their students.

Note: The proposal is not to have CE190A be listed as a GE course. Rather, CE190A will be used as a variation for civil engineering students' GE program for 3 units of credit in Area D. Currently, CE students receive an Area D variation with CE 146 and ENGR 140; CE 190A is combining these two courses and placing the content in the semester before the students' senior project.

Please write a statement indicating the means and methods for evaluating the extent to which the objectives of the GE Area(s) and any writing requirements are met for all course sections:

In addition to statement listed below ("...steps [does] the department plan to take to ensure..."), a common rubric will be developed for writing assignments and used for each section.

What steps does the department plan to take to ensure that instructors comply with the respective category criteria and who is responsible?

This course is being developed by several faculty in the department, and will be led by a full-time lecturer in civil engineering once it is offered in Fall 2019. This full-time faculty will be responsible for leading another faculty member in developing course materials consistent with the GE and course learning outcomes.

The Department of Civil Engineering has a curriculum committee which meets every other week during the academic year. The committee has recently decided that, every two years, each course in the undergraduate BS program will be reviewed to make sure it is meeting the course description and learning outcomes.

General Education Details - Area D: The Individual and Society

Section 1.

Please provide a statement indicating the means and methods for evaluating the extent to which the objectives of Area D, the cultural diversity requirements, and writing requirements are met for all course sections.

**Please see below for background information

Students will submit individual project assignments that meet the 1500 word minimum requirement. These assignments will require the students to describe and apply the principles of civil engineering in a socioeconomic context to solve engineering problems. Civil engineering case studies from previously completed projects will be selected to provide students an opportunity to evaluate the solutions using ethical and social values in their historical and cultural contexts. American Society of Civil Engineering (ASCE) ethical cannons will be specifically referenced.

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What steps will the department take to ensure that instructors comply with the category criteria (and who is responsible)? Before a course can be offered in multiple sections, a designated person in the department must provide a description of what would be common to all sections and what might typically vary between sections.

Common syllabus and learning objectives; oversight by full-time faculty and curriculum committee. Meetings between part-time instructors and full-time faculty leads.

Section 2.

Indicate in written statements how the course meets the following criteria for Area D. Relate the statements directly to the course syllabus and outline. Be as succinct as possible.

Describes and evaluates ethical and social values in their historical and cultural context.

Students will be asked to describe the role of the design professional in the project development process. Since civil engineering design products contribute to the infrastructure (roads, bridges, water treatment) modern society relies on to function, it is critical for students to evaluate ethical and social values in their historical and cultural contexts within project development. With the role civil engineers play in creating safe and reliable infrastructure, the students' will be asked to explain the responsibility of ethics in professional civil engineering practice.

Most civil engineering projects in CA must comply with the California Environmental Quality Act (CEQA), passed to protect the natural environment, historical structures/monuments, and cultural artifacts/remains during construction. This course will address CEQA in detail as part of the development of a civil engineering project, and the importance of considering societal, environmental, historical and cultural impacts when designing infrastructure and implementing the project.

Explains and applies the principles and methods of academic disciplines to the study of social and individual behavior.

Students are expected to explain and apply economic principles and methods to explain social and individual behavior. Students will identify applicable technical and socioeconomic criteria and constraints of civil engineering example projects.

Demonstrates an understanding of the role of human diversity in human society, for example, race, ethnicity, class, age, ability/disability, sexual identity, gender and gender expression.

Students are expected to demonstrate an understanding of ethical decision making when evaluating engineering design proposals including the importance of engineering project accessibility regardless of gender, ethnicity, nationality, ability/disability, etc.

Explains and critically examines social dynamics and issues in their historical and cultural contexts.

Students will develop an understanding of the legal and environmental constraints of the decisions that design professionals face, and critically examine social dynamics and issues in their historical and cultural contexts.

Related to a previous response, civil engineering projects (e.g., a new bridge, building, pipeline) are reviewed from many different perspectives including social, political, cultural, economical, and environmental. Especially in California, it is nearly impossible to develop infrastructure without an

intricate understanding of how project solutions need to balance the constraints from these various perspectives. This course is designed to present these constraints to students, and have them develop solutions that balance the many stakeholders on a project.

Includes a writing component described on course syllabus

- 1) If course is lower division, formal and/or informal writing assignments encouraging students to think through course concepts using at least one of the following: periodic lab reports, exams which include essay questions, periodic formal writing assignments, periodic journals, reading logs, other. Writing in lower division courses need not be graded, but must, at a minimum, be evaluated for clarity and proper handling of terms, phrases, and concepts related to the course.
- 2) If course is upper division, a minimum of 1500 words of formal, graded writing. [Preferably there should be more than one formal writing assignment and each writing assignment (e.g. periodic lab reports, exams which include essay questions, a research/term paper etc.) should be due in stages throughout the semester to allow the writer to revise after receiving feedback from the instructor. Include an indication of how writing is to be evaluated and entered into course grade determination.]

The required writing assignments will be individual products that will eventually be built into a final submission of a proposal in response to a Request for Proposal (RFP) of a civil engineering project. Typical proposals are approximately 8-10 pages of writing with accompanying figure and tables and include an introductory letter (1 page), qualification and experience (1-2 pages), project understanding and approach (2 pages), scope of work (2-3 pages), project schedule (1 page), work hours and estimate (1 page).

The proposal will be broken into several smaller assignments, each graded and returned to the student. Then, the proposal will be assembled as a final product for completion by the end of the semester. The students will be expected to incorporate the feedback from previous submissions.

Section 3.

If you would like, you may provide further information that might help the G.E. Course Review Committee understand how this course meets these criteria and/or the G.E. Program Objectives found in the CSUS Policy Manual, General Education Program, Section I.B.

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Please attach any additional files not requested above:

Reviewer Comments:

Key: 13621