CE 262A: NONLINEAR STRUCTURAL ANALYSIS

In Workflow

1. CE Committee Chair (fogarty@csus.edu)
2. CE Chair (fellb@csus.edu)
3. ECS College Committee Chair (figgess@csus.edu)
4. ECS Dean (kevan@csus.edu)
5. Academic Services (torsetj@csus.edu;%20cnewsome@skymail.csus.edu)
6. Senate Curriculum Subcommittee Chair (curriculum@csus.edu)
7. Dean of Undergraduate (james.german@csus.edu;%20celena.showers@csus.edu)
8. Dean of Graduate (cnewsome@skymail.csus.edu)
9. Catalog Editor (torsetj@csus.edu)
10. Registrar's Office (wlindsey@csus.edu)
11. PeopleSoft (PeopleSoft@csus.edu)

Approval Path

1. Thu, 17 Sep 2020 02:36:20 GMT
   Julie Fogarty (fogarty): Approved for CE Committee Chair
2. Thu, 17 Sep 2020 16:14:35 GMT
   Benjamin Fell (fellb): Approved for CE Chair
3. Thu, 01 Oct 2020 16:34:24 GMT
   Gareth Figgess (figgess): Approved for ECS College Committee Chair
4. Fri, 02 Oct 2020 15:52:38 GMT
   Kevan Shafizadeh (kevan): Approved for ECS Dean

New Course Proposal

Date Submitted: Thu, 17 Sep 2020 02:30:47 GMT

Viewing: CE 262A : Nonlinear Structural Analysis

Last edit: Thu, 17 Sep 2020 02:30:46 GMT

Changes proposed by: Julie Fogarty (218645519)

Contact(s):

Name (First Last)	Email	Phone 999-999-9999
Benjamin Fell	fellb@csus.edu	(916) 278-8139

Catalog Title:
Nonlinear Structural Analysis

Class Schedule Title:
Nonlinear Structural Analysis

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 2021 (2021/2022 Catalog)

Subject Area: (prefix)
CE - Civil Engineering

Catalog Number: (course number)
262A

Course ID: (For administrative use only.)
TBD

Units:
3

In what term(s) will this course typically be offered?
Spring term only - odd years

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:
Graduate CE courses are being renumbered to clarify course pre- and co-requisites and topic areas to help students plan their path to graduation. Prerequisites numbers (not courses) are being changed to reflect course number changes.

This is not a new course. It is being proposed as a new course so that the existing number can be reused for another course. There is no change to the content (course description, ELOs, assessment) for this course. It is simply a number change.

When coding this course for the catalog, please drop the A on this course so it is simply the number CE 262 (another course using CE 262 is being changed concurrently to a different number).

Course Description: (Not to exceed 80 words and language should conform to catalog copy.)
Theory and applications of nonlinear structural analysis including geometric and material nonlinear effects. Stability issues and second-order analysis methods are discussed in the context of moment amplification effects, member buckling, and the behavior of structural elements and frames undergoing large deformations. Inelastic material behavior and stress resultant plasticity concepts within a line-type element framework. Computer implementation of geometric nonlinear behavior.

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

Fee Course?
No

Is this course designated as Service 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:
CE 260

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):
Seminar

Seminar Classification
CS#05 - Seminar (K-factor=1 WTU per unit)
Seminar 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: Describe outcomes using the following format: 'Students will be able to: 1), 2), etc.'
1) Assess the structural performance and design context within which nonlinear structural analysis becomes necessary.
2) Develop a fundamental understanding and physical intuition for phenomena in geometric nonlinearity (P-delta effects, stiffening/unstiffening, critical loads), as well material nonlinearity in the context of frame structures.
3) Develop an understanding of the interactions between geometric and material nonlinearity focusing on collapse.
4) Determine how these phenomena may be addressed in computer code/software.
5) Integrate modeling of these types of behaviors in a practical context – focus on some commercial/open source codes, simulation guidance (e.g., ATC 114) and acceptance criteria.

Attach a list of the required/recommended course readings and activities:
CE 262A.doc

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.
Homework: ELOs 1-5
Project: ELOs 1-5
Exams: ELOs 1-5

For whom is this course being developed?
Majors in the Dept

Is this course required in a degree program (major, minor, graduate degree, certificate?)
No

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

Graduate (Masters) Learning Goals:
Critical thinking/analysis
Information literacy

Disciplinary knowledge
Research (optional)

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 Graduate Writing Intensive (GWI) course?

No

Key: 14279