REGULAR COURSE SYLLABUS

College of: Professional Studies

Department: Engineering and Engineering Technology

Prefix & Course Number: SSE 3175  Crosslisted With*: ___

Course Title: Modeling Structural Systems

Transcript Course Title (30 characters): Modeling Structural Systems

Check All That Apply: Required for Major: X  Required for Minor: ___  Specified Elective: ___

Required for Concentration: ___  Elective: ___  Service Course: ___

To receive Title IV financial aid funds, all institutions of higher education must comply with the federal definition of a credit hour. The Higher Learning Commission requires institutions to maintain policies and procedures for verifying compliance with this definition.

Federal Credit Hour Definition: A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally-established equivalency that reasonably approximates not less than:

(1) one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or ten to twelve weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time; or (2) at least an equivalent amount of work as required in paragraph (1) of this definition for other activities as established by an institution, including laboratory work, internships, practica, studio work, and other academic work leading toward the award of credit hours. 34CFR 600.2 (11/1/2010)

Credit Hours: 3 (3+0)  Schedule Type: L  Grade Mode: L

Face-to-Face or Equivalent Hours per course:

Lecture 45  Lab ___  Internship ___  Practicum ___  Other (please specify type and hours): ___

Additional Student Work Hours per course: 90

Variable topics umbrella course: No X  Yes ___  If yes, number of credits/repeats allowed ___

Specified repeatable course: No X  Yes ___  If yes, number of credits/repeats allowed ___

APPROVED: ____________

Date 10/12/2015

Department Chair OR Program Director

Date 10-14-15

Dean OR Associate Dean

Date

Associate VP, Academic and Student Affairs

Date

*If crosslisted, attach completed Course Crosslisting Agreement Form
Prefix and Course Number: SSE 3175

Prerequisite(s): SSE 3135 with “C” or better or permission of instructor
Corequisite(s): ______
Prerequisite(s) or Corequisite(s):

Banner Enforced Coding:
Prerequisite(s): SSE 3135 with “C” or better
Corequisite(s): ______
Prerequisite(s) or Corequisite(s):

Registration restrictions: Level ______ Class ______ Program/Major ______ Student attribute ______

Catalog Course Description:
In this course students study the modeling for structural analysis and design. It focuses on the interaction of the components and their behavior within a structural system. The basic concepts of structural modeling are introduced first, followed by the evolution of structural analysis, and then the analysis methods and types are presented along with the discussion of interactions within structural systems.

Required Reading and Other Materials will be equivalent to:

Specific, Measurable Student Behavioral Learning Objectives:
Upon completion of this course the student should be able to:
1. Model and analyze structural behavior at component level.
2. Identify interactions within structural systems.
3. Model complete structural systems.

Detailed Outline of Course Content:
I. Introduction to Structural Modeling
II. History of Structural Analysis Methodology
III. Analysis Models
   A. Continuum Models
   B. Discretized Models
IV. Analysis Methods
   A. Direct Stiffness Method
   B. Finite Element Method
      1. Finite Elements
      2. Analysis Control
      3. Numerical Methods
V. Analysis Types
   A. Static Analysis
   B. Dynamic Analysis
   C. Buckling Analysis
   D. Mode-Shape/Vibration Analysis
VI. Modeling Interactions in Structural Systems
   A. Geometric nonlinearities
   B. Material nonlinearities
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C. Connection nonlinearities  
D. Follower forces  
E. Imperfections (geometric and material)  

**Evaluation of Student Performance:**  
1. Examinations  
2. Assignments