

CE 480**Structural Systems Design****3 Units**

USC | SONNY ASTANI DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

ABET Course Syllabus

Course Information, Textbook and Supplementary Materials

Capstone Course

Course Description: Evaluate, design and analyze buildings. Organize and perform calculations for vertical loads, wind loads, and seismic loads on building projects.

Required: BSCE General and BSCE Structural

Prerequisites: CE 358 Theory of Structures I
 CE 467L Geotechnical Engineering
 CE 473 Engineering Law, Finance, and Ethics
 CE 482 Foundation Design
 Plus one of the following: CE 456 Design of Steel Structures or
 CE 457 Reinforced Concrete Design or
 CE 478 Timber and Masonry Design

Co-Requisite: none

Required Textbook: none

Reference: none

Topics Covered	Learning Outcomes
The study of structural systems	Students will know: <ol style="list-style-type: none"> 1. Determination of dead and live loads 2. Structural framing systems 3. Lateral force resisting systems 4. Structural dynamics of buildings 5. Wind forces 6. Seismic forces 7. Irregular structures 8. Distribution of forces based on rigidity
Analysis and design of structural systems	Students will know how to: <ol style="list-style-type: none"> 9. Determine the design forces for dead and live loads 10. Determine wind and seismic forces on buildings 11. Determine building code requirements for structural systems
Factors affecting existing and new structural systems	<ol style="list-style-type: none"> 12. Recognize characteristics of different structural systems 13. Recognize that seismic safety is affected by choice of structural system and degree of structural irregularity

Skills and knowledge regarding the process of structural design	14. Recognize that ethical issues are involved in decision-making processes 15. Develop and organize design calculations for a building
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Lecture and Lab Schedule			
Lecture		Lab	
Sessions per Week	Duration per Session	Sessions per Week	Duration per Session
1	3 hours	n/a	

Relation of Course Objectives to Program Outcomes

The Civil Engineering program is designed to teach beyond the technical content of the curriculum and prepare the students to utilize what they learn in a professional setting.

This course contributes to the program outcomes as outlined in the adjacent table.

Course Contribution to Program Outcomes (a-k)	✓ Key
c. An ability to design a system component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.	✓
d. An ability to function on multi-disciplinary teams.	✓
f. An understanding of professional and ethical responsibility.	
g. An ability to communicate effectively.	✓
h. The broad education necessary to understand the impact of engineering solutions in a global economic and environmental and societal context.	✓
j. Knowledge of contemporary issues.	✓

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