CE 207L Introduction to Design of Structural Systems 2 Units

USC | SONNY ASTANI DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

ABET Course Syllabus

Course Information, Textbook and Supplementary Materials

Course Description: Structural materials, components and systems; gravity and lateral forces; structural performance and failures; introduction to structural plans and analysis; computer applications, case studies, design project.

Required for: BSCE, BSCE Structural, and BSCE Building Science

Prerequisites: CE 107 Introduction to Civil Engineering Graphics
CE 205 Statics

Co-Requisite: CE 225 Mechanics of Deformable Bodies

Required Textbook:
Simplified Engineering for Architects and Builders, *James E. Ambrose and Patrick Tripeny,* Wiley, John & Sons, Inc., Edition 10, December 2005

Reference: (material distributed in class)

Topics Covered	Learning Outcomes
Analyzing and designing structural systems	Students will know the basics of design and analysis regarding these topics: 1. Ethics in structural design 2. Learning from structural failures 3. Determination of dead and live loads 4. Structural framing systems 5. Lateral force resisting systems 6. Structural dynamics of buildings 7. Wind forces 8. Seismic forces 9. Irregular structures 10. Distribution of forces based on rigidity 11. Determine wind and seismic forces on buildings. 12. Determine building code requirements for structural systems
Factors affecting existing and new structural systems	13. Recognize characteristics of different structural systems. 14. Recognize that seismic safety is affected by choice of structural system and degree of structural
The process of structural design	15. Recognize that ethical issues are involved in decision process 16. 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
2	1.5 hours	1	1.5 hours

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.	
k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	

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