CE 478 Timber and Masonry Design 3 Units

USC | SONNY ASTANI DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

ABET Course Syllabus

Course Information, Textbook and Supplementary Materials — **Design Kernel**

Course Description: Characteristics and properties of wood; beams, columns, trusses, connectors, and diaphragms. Properties of masonry, working stress and strength design, and seismic design requirements.

Design Kernel for: BSCE **Elective for:** BSCE Structural

Prerequisite: CE 225 Mechanics of Deformable Bodies

Co-Requisite: none

Required Textbook: Donald E. Breyer, Kenneth J. Fridley, David G. Pollock, Jr., and Kelly E. Cobeen. *Design of Wood Structures – ASD.* 6th ed. McGraw Hill.

Reference: none

Topics Covered	Learning Outcomes
Materials and design requirements	Students will have learned to: 1. Recognize properties of wood and the effect on design 2. Recognize properties of masonry and the effect on design 3. Recognize UBC design requirements for wood and masonry
Analyzing and designing timber and masonry structural systems	4. Determine the design forces for dead and live loads 5. Analyze and design timber beams and columns 6. Analyze and design masonry beams, walls, and columns 7. Analyze and design timber and masonry connections
Analyzing and designing wind and seismic forces	8. Analyze flexible diaphragms, chords, and collectors 9. Analyze and design plywood shear walls 10. Analyze and design masonry shear walls

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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
a. An ability to apply knowledge of mathematics, science, and engineering	
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.	
e. An ability to identify, formulate and solve engineering problems.	
h. The broad education necessary to understand the impact of engineering solutions in a global economic and environmental and societal context.	

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