CM 282: PRINCIPLES OF STRUCTURAL DESIGN

Citrus College Course Outline of Record

Heading	Value
Effective Term:	Fall 2024
Credits:	2
Total Contact Hours:	36
Lecture Hours :	36
Lab Hours:	0
Hours Arranged:	0
Outside of Class Hours:	72
Total Student Learning Hours:	108
Prerequisite:	CM 281.
Transferable to CSU:	Yes
Transferable to UC:	No
Grading Method:	Standard Letter

Catalog Course Description

This course provides a basic understanding of key construction structural elements including structural steel, reinforced concrete, structural masonry and timber. 36 lecture hours.

Course Objectives

- Analyze methods, materials, and equipment used to construct key structural components of projects
- Understand the basic principles of structural behaviors in different building systems (e.g. steel/concrete/wood/masonry building systems)
- Explain the important structural codes and standards.

Major Course Content

1. Overview of the Building Delivery Process
2. Design and Construction Regulations (Building Codes, Occupancy Classifications of Buildings, Type of Construction Classification of Buildings)
3. Loads on Buildings (Vertical and Horizontal Loads on Buildings)
4. Load Resistance (The Structural Properties of Materials)
5. Below-Grade Construction (Foundation Systems and Basements).
6. Materials for Wood Construction (Lumber Dimensions, Grade Stamps, Structural Properties, Engineered Wood Products, Fasteners, and Connectors).
7. Wood Light-Frame Construction (Typical Balloon/Platform Frame Construction, Ceiling-Joist Framing, Roof Framing)
8. Structural Insulated Panel Construction (Basics of SIP System, SIP Wall Assemblies, SIP Floor Assemblies, SIP Roof Assemblies, Advantages and Disadvantages).
9. Structural Steel Material and Construction (Commonly Used Structural Steel Sections, Structural Properties)
10. Structural Steel Construction (Construction Process)
11. Concrete Construction (Formwork, Reinforcement, Tilt-Up and Slabs-on-Ground).
12. Site-Cast and Precast Concrete Framing Systems
13. Masonry Materials (Mortar and Brick, Concrete Masonry Units, Natural Stone, and Glass Masonry / Units / Masonry and Concrete Bearing Wall Construction)
14. Ethical Issues pertinent to structure design and the profession at large.

Suggested Reading Other Than Required Textbook

Read instructor-assigned Structural Building Codes.

Examples of Required Writing Assignments

Write a report that addresses latest BIM technologies .

Examples of Outside Assignments

Examine key safety protocols associated with key structural elements of buildings.

Instruction Type(s)

Lecture, Online Education Lecture