

College of San Mateo
Official Course Outline

1. COURSE ID: BLDG 750 **TITLE:** Structural Provisions

Units: 3.0 units **Hours/Semester:** 48.0-54.0 Lecture hours; 96.0-108.0 Homework hours; 144.0-162.0 Total Student Learning hours

Method of Grading: Letter Grade Only

2. COURSE DESIGNATION:

Degree Credit

Transfer credit: none

3. COURSE DESCRIPTIONS:

Catalog Description:

Study of structural design principles and proper inspection methods of concrete, masonry, steel, and wood construction. Effects of dynamic loading on structures from wind, seismic, hydrostatic, and other environmental forces are examined. The application and interpretation of structural codes, standards, and testing criteria used to assure quality construction are emphasized. Designed for students interested in inspecting, contracting, architecture, and engineering.

4. STUDENT LEARNING OUTCOME(S) (SLO'S):

Upon successful completion of this course, a student will meet the following outcomes:

1. Illustrate the transfer of load-bearing reactions from dynamic forces within structures.
2. Recognize applicability of building codes, standards and other resources that pertain to structural design and construction requirements.
3. Interpret structural design and engineering graphics and terminology found in construction documents and building codes.
4. Judge structural design and construction through proper plan review and inspection methods.
5. Interpret and apply structural code requirements.

5. SPECIFIC INSTRUCTIONAL OBJECTIVES:

Upon successful completion of this course, a student will be able to:

1. Illustrate the transfer of load-bearing reactions from dynamic forces within structures.
2. Recognize applicability of building codes, standards and other resources that pertain to structural design and construction requirements.
3. Interpret structural design and engineering graphics and terminology found in construction documents and building codes.
4. Judge structural design and construction through proper plan review and inspection methods.
5. Interpret and apply structural code requirements.

6. COURSE CONTENT:

Lecture Content:

- Review basic structural concepts and the mechanics of load transfer in buildings.
- Illustrate seismic forces through the examination of earthquake effects on land and in structures in California.
- Review the methodology of assessing the structural integrity of buildings through the use of codes, standards, and provisions.
- Search and find appropriate structural code references within the International and California Building Codes, standards, and structural provisions.
- Review the roles of the Property Owner, Responsible Party, Inspector, and Contractor to ensure quality assurance and quality control during design and construction.
- Interpret and apply the intent of structural code requirements in role-playing and with sound judgment and without bias.
- Understand structural design and engineering graphics and terminology found in construction documents and building codes.
- Discover deficient structural design and construction through proper plan review and inspection methods.
- Review and investigate structural construction documents and submittals against applicable structural codes.

- Study the dynamic loading of structures from wind, floods, hydrologic, and earthquake forces.
- Study the design requirements and the special inspection requirements of Concrete, Masonry, Steel, and Wood Structures

7. REPRESENTATIVE METHODS OF INSTRUCTION:

Typical methods of instruction may include:

- Lecture
- Guest Speakers
- Other (Specify): Structural materials presentations and demonstrations, written examinations, In-Class and Homework reading assignments, International Building Code workbook exercises.

8. REPRESENTATIVE ASSIGNMENTS

Representative assignments in this course may include, but are not limited to the following:

Writing Assignments:

Writing Assignments: Assignments apply readings to a structural design, construction, or inspection problem solving exercise. All work is discussed in class with examination and discussion of scenarios and special use cases. Resolution and solutions are found through research and application of structural codes and standards to an answer/solution.

Presentation: Students may work in teams or individually to research and present current technologies in structural engineering and construction. Small groups work together to solve common structural issues found in design, plan review and construction. All work is discussed in class with examination and discussion of scenarios and special use cases. Resolutions and solutions are found through research and application of structural codes and standards to an answer/solution.

Reading Assignments:

Assignments are from structural sections of the building codes and selected readings. All work is discussed in class with examination and discussion of scenarios and special use cases. Resolutions and solutions are found through research and application of structural codes and standards to an answer/solution.

9. REPRESENTATIVE METHODS OF EVALUATION

Representative methods of evaluation may include:

- Class Participation
- Class Work
- Exams/Tests
- Homework
- Quizzes
- In-class working groups, class presentations, short answer written examinations.

10. REPRESENTATIVE TEXT(S):

Possible textbooks include:

- International Code Council. *2022 California Building Code*, ed. Washington, DC: International Code Council, 2022

Origination Date: October 2023
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Course Originator: Brent Hipsher