

CEE 484 – STRUCTURAL LOADS

Instructor

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Course Goal

The goal of this class is to enable students to determine the loads that are used to design structures. You will become familiar with the current guidance referenced in modern building codes throughout the United States. Understanding how to derive these loads will enable you to participate in the process of design and analysis of buildings.

Student objectives of the class are:

- Read and interpret structural drawings to see the structural system.
- Apply approximate structural analysis techniques to help understand the “Load Path” through a structural system and to validate computer modeling results.
- Develop a physical understanding of how loads flow through a structural system—understand the “Load Path.”
- Become familiar with and apply structural loading requirements of ASCE 7 and the International Building Code.
- Document the design process by writing the “Basis of Design” and organizing calculations.

Loading will be based on the International Building Code and ASCE 7. Worked examples and homework assignments will give you ample experience in determining loads due to various actions and how they are applied to structural systems.

Reference Text

ASCE/SEI 7-16, “Minimum Design Loads and Associated Criteria for Buildings and Other Structures” and Commentary

Prerequisites

CEE 381, Structural Analysis, is a prerequisite for this course. If you have not taken CEE 381, or an equivalent course, please see me, as you may need to withdraw from CEE 484.

Student Learning Outcomes

This course contributes to a number of the Student Learning Outcomes (SLOs) that are assessed on a regular basis as part of the CEE department continuous improvement program. For a description of the SLOs, refer to the CEE website at <http://www.cee.hawaii.edu/undergraduate>.

The following table identifies the SLOs addressed in this course.

Student Learning Outcome (SLO)	1	2	3	4	5	6	7
Course Emphasis	2	2	2				1

Reading

Reading the text and assigned papers is required. A number of published articles of interest will also be distributed for reading. Class quizzes will be used to evaluate home reading.

Attendance

University policy on class attendance must be followed. Regular attendance at class is expected. Unavoidable absences should be explained to the instructor.

Homework and Exam

Homework assignments will be given periodically (weekly) based on the materials covered. Homework must be neat and well-presented; sloppy homework will be returned as unsatisfactory. Late assignments will be graded out of 80% for one week, and 50% thereafter. No assignments will be accepted after the work has been covered in a test.

Since the homework assignments represent a substantial portion of the course grade, you must keep up with the assignments in order to avoid a poor grade. They also provide your best opportunity to practice and learn the course material.

One midterm exam is scheduled during the normal class period. The final exam is TBA.

Basis for Grading

The grade for CEE 484 will be determined as follows:

Homework	25%
Quizzes	5%
Midterm Test	30%
Final Exam	40%
Total	100%

List of Topics

- Design Philosophy, ASD and LRFD
- Structural Analysis
- Design Codes
- Gravity Loads
- Rain and Ice loads
- Wind Loads
- Earthquake Loads
- Tsunami Loads and Effects