

CEE 485 – REINFORCED CONCRETE DESIGN

Instructor

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Catalog Description

CEE 485 Reinforced Concrete Design (4 credits) (3 Lec, 1 2-hr lab)

Behavior and design of reinforced concrete beams, one-way slabs and columns. Laboratory section includes design and hands-on manufacturing and testing of reinforced concrete members.

Prerequisite: CEE 375 and CEE 381

Textbook

- “**Reinforced Concrete – Mechanics and Design**”, Eight Ed., James Wight, ISBN-13: 978-0136834144

Reference

- ACI 318-19, Building Code Requirements for Structural Concrete and Commentary

Course Specific Outcomes

This course provides an introduction to reinforced concrete behavior, design and construction. By the end of the semester, students will have an understanding of the behavior of reinforced concrete members when subjected to flexure, axial loads and shear forces. The design of beams, one-way slabs and columns will be covered in detail. The design of footings and retaining walls will be covered as time allows. Practical construction guidelines will be introduced throughout the course. All design will be in compliance with current ACI 318 Building Code Provisions.

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	3			1

Attendance

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

Pop-up Quizzes

There will be several unannounced quizzes. The worst one will be dropped.

Homework Assignments and Exams

Approximately 12 one-week assignments will be set. Typically, these will be uploaded to the class Laulima website on Thursday and will be due the following Thursday. Late assignments will be credited

80 percent for 5 days following the due date and 60 percent thereafter. Late assignments will not be accepted after a test is given on the material covered in the assignment.

Homework must be neat and well-presented; sloppy homework will be returned as unsatisfactory.

Two midterm exams are scheduled during the normal class period. The final exam is TBA.

Lab Project

The laboratory component of this course is intended to expand students’ knowledge beyond the course material and also reinforce written communication skills. In groups of 4 or 5, students will build a reinforced concrete beam to satisfy a given design. All beams will be cast with the same concrete and tested in bending during the second half of the semester. Prior to testing, each group must write a draft report describing fabrication of their beam. The report must include a computation of the ACI 318 code nominal strength for their own beam, and all other beams, and estimates of the actual failure load and failure mechanism for each beam. Each team will prepare a final report discussing the comparison between the results of the beam tests and their estimates for all beams.

UH-Manoa College of Engineering Academic Integrity Statement

The College of Engineering, in order to prevent the use of unauthorized academic assistance, bans the use of any electronic communication devices, including but not limited to, smart phones, smart tablets, smart watches, and related technology while completing closed notes/book quizzes, examinations, or other deliverables in which the faculty expressly outlines these expectations. Additionally, per the University of Hawai’i Student Conduct Code, the following additional actions may constitute a violation of Academic Dishonesty:

- the use of any unauthorized assistance in taking quizzes, tests, or examinations
- use of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments
- the acquisition, without permission, of tests or other academic material belonging to a member of the UH faculty, staff or student body (i.e., use of Chegg or similar website to reference old tests, assignments, etc. without permission)
- engaging in any behavior specifically prohibited by a faculty member in the course syllabus or class discussion

The immediate disciplinary actions will be at the discretion of the instructor but may result in reporting to the Department, College, and/or the Office of Judicial Affairs where, if found in violation, the resulting sanction(s) may include expulsion from the University.

Class Website

The UH Laulima site at <https://laulima.hawaii.edu/> will have copies of all lecture notes, slides, homework assignments, etc.

Basis for Grading

The grade will be determined as follows:

Homework	15%
Quizzes	5%
Lab Project	10%
Midterm Exam #1	20%
Midterm Exam #2	20%
Comprehensive Final	30%
Total	100%