

CNET3480 Structural Design with Concrete, Timber, and Other Materials **(3 credit hours: 2+3)**

Instructor: Zhenhua Huang
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Fall 2026
Lec Time: (T, Th) 9:05 - 9:55 am
Lab Time: (Th) 5:00 pm - 7:50 pm
Meeting Place: F175
Lab Place: F183

Course Description:

This course offers a review of the current requirements and techniques for the design of modern structures using materials such as reinforced concrete, timber, engineered brick, and concrete masonry. Relevant design specifications and criteria are included. This course provides opportunities for students to take advantage of software packages (SAP2000, EnerCalc, etc.) supported by the department in the classroom, lab assignments, and projects.

Course Objectives:

By the end of the course, you should be able to:

- Understand the flexural and shear behavior, analysis, and design procedures of rectangular beams.
- Understand the behavior and ACI provisions for bond, anchorage, and development length.
- Understand ACI serviceability requirements, including crack control and deflection.
- Understand the behavior, analysis, and design procedures of short columns.
- Understand the behavior, analysis, and design procedures of footings.
- Understand the design and behavior of wood truss members and beams using sawn lumber and glued laminated members.
- Understand the design and behavior of masonry-bearing walls and shear walls.

Course Outcomes:

- ABET #2: an ability to design solutions for well-defined technical problems and assist with engineering design of systems, components, or processes appropriate to the discipline

Course Requirements:

Attendance – Attendance is mandatory. More than six absences will result in a grade of F for the course. Lectures, projects, and class discussions will contain vital information needed to do well on the exams.

Required text: Design of Concrete Structures (2025 Release)
David Darwin and Charles W. Dolan
McGraw Hill ISBN-13: 9781265224769

Exams: There will be two quizzes and a final exam. Each quiz is worth 20 points, and the final exam is worth 30 points. Exams will be based on text readings, handouts, class exercises, videos, and class lectures and discussions. Students are responsible for all text material, regardless of whether we review the text material in class or not.

Missed Exams: You will be allowed to make up a missed exam only if you have a documented university excused absence. If you know in advance that you will miss an exam, you **MUST** contact me before the scheduled exam. Make-up exams will not contain the same questions.

Assignments: In addition to the readings from the text, there will be lab assignments and a group project. No late assignments will be accepted. No emailed assignments will be accepted.

Grading Policy:

Grades will be based on:

Attendance, Participation, and Professionalism @ 10	=	10 pts
Lab Assignments @ 10	=	10 pts
2 quizzes @ 20	=	40 pts
Group project @ 10	=	10 pts
Final @ 30	=	30 pts

100 pts

Extra credit: There is none.

Grade Distribution:

90 - 100 = A

80 - 89 = B

70 - 79 = C

60 - 69 = D

Below 60 = F

Disabilities Accommodation:

The University of North Texas makes reasonable accommodations for students with disabilities. Students needing a reasonable academic accommodation must first register with the Office of Disability Access (ODA) to verify their eligibility. If a disability is verified, the student will request their letter of accommodation. ODA will provide faculty with a reasonable accommodation letter via email to begin a private discussion regarding a student's specific needs in a course.

Course Schedule:

Time	TOPIC	BOOK CHAPTER
Class Week 1	Introduction/Material Properties	1,2
Class Week 2	Material Properties/Design Fundamentals	2,3
Class Week 3	Flexure in Beams	4
Class Week 4	Flexure in Beams	4
Class Week 5	Shear in Beams	5
Class Week 6	Quiz 1	
Class Week 7	Bond, Anchorage, & Dev Length	6
Class Week 8	Serviceability	7
Class Week 9	Short Columns	9
Class Week 10	Footings	15
Class Week 11	Quiz 2	
Class Week 12	Introduction to Timber	W4
Class Week 13	Wood Tension and Compression Members	W7
Class Week 14	Wood Beam Design/Masonry	W6
Class Week 15	Project Presentation	
Class Week 16	Final Exam	