

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

Instructor: Zhenhua Huang
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Fall 2025
Time: (T, Th) 10:00-10:50 am
Lab Time: (T) 11:30 am-2:20 pm
Meeting Place: E264
Lab Place: F175

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 and analysis/design procedure of rectangular beams.
- Understand the behavior and ACI provision of bond, anchorage, and development length.
- Understand the ACI serviceability requirement: cracking control and deflection
- Understand the behavior and analysis/design procedure of short columns.
- Understand the behavior and analysis/design procedure 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 6 absences will be an “F” grade. Lectures, projects, and class discussions will contain vital information needed to do well on the exams.

Required text: Design of Concrete Structures (15th)

David Darwin, Charles W. Dolan, and Arthur H. Nilson
McGraw Hill ISBN-13: 978-0073397948

Exams: There will be THREE exams (this includes 2 quizzes and a final exam), each quiz is worth 20 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 writing assignments. 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 complies with Section 504 of the 1973 Rehabilitation Act and with the Americans with Disabilities Act of 1990. The University of North Texas provides academic adjustments and auxiliary aids to individuals with disabilities, as defined under the law. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring accommodation, please see the instructor and/or contact the Office of Disability Accommodation at 940-565-4323 during the first week of class.

Course Schedule:

Time	TOPIC	BOOK CHAPTER
Class Week 1	Introduction/Material Properties	1,2
Class Week 2	Material Properties/Design Fundamental	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, & D 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	