CNET 4620 Advanced Design of Cold-Formed Steel Structures 3cr (2,3)

Instructor: Cheng Yu Spring 2026
DP F119, Tuesday 2:30pm-4:20pm (Lecture)
DP F119, J120, Tuesday 5:00pm-7:50pm (Lab)

Office Hours: By appointment Office: NTDP F115X
Phone: 940-891-6891 Email: cheng.yu@unt.edu

Course Description:

Advanced Design in Cold-Formed Steel Structures. 3 hours (2;3). A study of the theories of design and behavior of cold-formed / light gauge steel structural members, connections, and systems. Relevant design specifications and computer applications are included.

Course Objectives

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

1. Understand the behavior of cold-formed steel members
2. Determine design strength of cold-formed steel members
3. Calculate design strength of typical cold-formed steel connections
4. Design cold-formed steel stud framed shear walls

Supported ABET Student Learning Outcome:

(ABET SO2) An ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline.

Course Requirements: Attendance – Attendance is mandatory.

Required text: "North American Specification for the Design of Cold-Formed Steel Structural Members, 2016 Edition" AISI S100-2016, American Iron and Steel Institue.
Download link: https://cfsei.memberclicks.net/free-publications-by-development---aisi-2020-22-series-framing-standards

Required software:
CUFSM https://www.ce.jhu.edu/cufsm/downloads/
MASTAN http://www.mastan2.com/

Exams: There will be 1 exam. Exam will be based on homework, text readings, handouts, lab exercises, class lectures. 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 the instructor before the scheduled exam. Make-up exams may not contain the same questions and may contain only essay and short answer questions.

Assignments: In addition to the readings from the text, there will be writing assignments and in-class assignments. Late assignments will NOT be accepted.

Final Project: The students will be required to finish a final project at the end of this semester. The deliverables of the final project include a writing report and presentation materials.

Grades Components:		Grade Distribution	
Homework and Inclass Assignments	20%	A	90-100%
Lab Assignments	35%	B	80-89.99%
Final Project	25%	C	70-79.99%
Midterm Exam	20%	D	60-69.99%
Total	100%	F	0-59.99%

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.

Additional Policies and Procedures:

Tardiness: If you arrive late, please enter quietly and sit down. Do not walk in front of speakers or disrupt the class in any other way.

Cell Phones: Please remember to turn off phones prior to class.

Extra Help: PLEASE DO NOT WAIT UNTIL THE LAST MINUTE. If you are having trouble with this class, please come by my office during office hours. I am also available by email at cheng.yu@unt.edu.

Lecture Outline (tentative)

Lecture Topics	BOOK CHAPTER (AISI S100)
Introduction	A
Thin Plate Buckling and Design Criteria	Appendix 1
Effective Width Method Compression Members	E
Direct Strength Method Flexural Members	F
Midterm Exam	March 3, 2025
Connections	J
Structure Assembles	I
Design of Load Bearing Walls	Handout
Final Project	

Lab Outline (tentative)

Lab 1 Material Properties and Coupon Test Analysis
Lab 2 Elastic Thin-Plate Buckling
Lab 3 Strength of Cold-Formed Steel Compression Members
Lab 4 Strength of Cold-Formed Steel Flexural Members
Lab 5 Truss Analysis
Lab 6 Bearing Wall Analysis
Lab 7 Shear Wall Analysis
Fieldtrip: TBD Final Project: TBD