CEE 181: Design of Steel Structures

Meeting time and location:

Mon, Wed 1:30 PM - 3:20 PM
Y2E2, Room B21

Teaching team

Instructor
Jack Baker
Office hours: Mon, Wed 9:00 - 10:30 AM

Course Assistant:
Anthony Ayllon
Building 540, Room 127
Office hours: Tues, Thurs 12:30-2:30 PM

Course website

canvas.stanford.edu

Prerequisites

This course will assume knowledge of Mechanics of Materials (CEE 101A) and Structural Analysis (CEE 180). Please speak with me if you have any questions as to whether you have suitable prerequisite knowledge.

Textbook and reference materials

The following textbook is required for this course, and we will use it for supplemental reading and homework assignments. Paperback copies are available on Amazon and other sellers for a low price.

- Segui, W.T. (2017). Steel Design, 6th Edition, Cengage Learning.

You are also required to purchase the AISC Manual of Steel Construction, as it is an essential tool for structural engineers designing with steel. I will provide you a code to purchase this manual at the discounted student price of $135 (instead of the regular $400).

- 15th Edition Steel Construction Manual (2017). American Institute of Steel Construction.

Finally, we will use the AISC Specification. This is included in the Manual, and copies are also available for free online.

- ANSI/AISC 360-16 Standard (2016). Specification for Structural Steel Buildings. American Institute of Steel Construction. `https://www.aisc.org/globalassets/aisc/publications/standards/a360-16-spec-and-commentary.pdf`

Evaluation

You will be evaluated on your ability to explain the course concepts and perform calculations using the techniques presented. Grades will be computed using the following weighting scheme:

Homework	20%
Midterm	30%
Project	20%
Final exam	30%

Homework assignments will typically consist of calculations that develop understanding of the materials presented in class. Exams will be similar to the homework in content and format. ***If you have schedule conflicts with the exam dates (see below), please speak with me immediately.***

Homework

- Homework assignments are to be submitted at the beginning of the lecture period on the date due. Late homework will be penalized 20% per day late. Homework submitted after the solutions have been provided will not be accepted.
- Clearly explaining what you have done to solve a homework or exam problem is as important as obtaining a correct numerical result. Some specific advice is as follows:
  - Provide the following results for each problem:
    - Restate what has been given to you, i.e. the data, and what is required
    - State the relevant theoretical topics/concepts
    - Write the formulae involved
    - Explicitly show the substitutions in the formulae
    - Get results
    - Box the results
    - Make sure the units are provided and that they are correct
  - Green engineering paper, rather than blank paper, is strongly suggested for write-ups. Drawing figures that are properly proportioned or scaled often prevent incorrect and misleading lines of thought.
  - Computer or calculator computations must be accompanied by appropriate documentation of how the computation was carried out. This might involve writing a few sentences of explanation, or attaching a printout of commented computer code.

Honor code

It is expected that Stanford's Honor code will be followed in all matters relating to this course. You are permitted to meet and exchange ideas with your classmates while studying and working on homework assignments, but you are individually responsible for your own work and for understanding the material. You are not permitted to copy or otherwise reference another students homework or computer code.

Course topics

- Material properties and loads
- Tension members
- Compression members
- Beams
- Beam-columns
- Bolted connections
- Welded connections

Tentative schedule:

Date	Topic	Book Sections	HW assigned	HW due
9/23	Introduction		1	
9/25	Material properties and loads	1-2		
9/30	Loads and load combinations		2	1
10/2	Tension members	3.1-3.7		
10/7	Tension members			
10/9	Compression members			
10/14	Compression members	4.1-4.7	3, Project	2
10/16	Beams	5.1-5.11		
10/21	Beams		4	3
10/23	Beams, beam-columns			
10/28	Beam-columns	6.1-6.8		4
10/30	Field trip (t.b.d.)			P-1
11/4	Midterm		Midterm	
11/6	Beam-columns		5	
11/11	Bolted connections	7.1-7.5		
11/13	Welded connections	7.10-7.11	6	5, P-2
11/18	Connection details			
11/20	Composite Beams		7	6
11/25	*Thanksgiving break*			
11/27	*Thanksgiving break*			
12/2	Composite Beams	9.1-9.7		
12/4	Review			7
12/11	Final Exam, 3:30-6:30 pm		Final	Project