

# CEE 486 STRUCTURAL STEEL DESIGN

## COURSE OUTLINE

Required Textbook: Segui, William T., "LRFD Steel Design", 6<sup>th</sup> Edition, Cengage Learning  
Earlier editions of the same text can also be used, though some code provisions and homework problems may be different.

Reference: AISC. "Steel Construction Manual" Fifteenth Edition, American Institute of Steel Construction, Chicago, Illinois, 2017. (Available at student rate of \$125)

Instructor: Ian N. Robertson, Professor of Civil Engineering, Holmes 383.  
Zoom office hours – 1:30 to 2:30pm, Mon. and Wed., or email [ianrob@hawaii.edu](mailto:ianrob@hawaii.edu) to make an appointment.

Prerequisites: CEE 381, Structural Analysis, is a prerequisite for this course. If you have not taken CEE 381, or an equivalent course, please see me, as you may need to withdraw from CEE 486.

Goals: This course introduces the design of structural steel tension members, beams, columns and connections, both bolted and welded. You will also be introduced to how these individual members are utilized to form a complete building structure. The course will discuss member behavior as well as design requirements and procedures of the Load and Resistance Factor Design method (LRFD). Passing reference will also be made to the Allowable Stress Design method (ASD).

Worked examples and homework assignments will give you ample experience in designing various members and connections. Design suggestions for economy and simplification of construction will be included throughout the course.

Reading: Reading the text and assigned papers is required. Assigned reading is shown on the attached schedule. A number of published articles of interest will also be distributed for reading. Class quizzes will be used to evaluate home reading.

Homework: Approximately 12 to 14 one-week assignments will be set. Assignments will generally be given on a Wednesday and due the following Wednesday. Late assignments will be graded out of 80% for one week and then out of 50%. No assignments will be accepted after the work has been covered in a test. Since the homework assignments represent a substantial portion of the course grade, you must keep up with the assignments in order to avoid a poor grade. They also provide your best opportunity to practice and learn the course material.

Basis for Grades:	Homework.....	25%
	Quizzes .....	5%
	Midterm Test.....	25%
	Final Exam.....	<u>45%</u>
	Total	100%

Note that homeworks carry a significant portion of the grade. Make every attempt to complete all homework assignments on time!

Grade Assignment: I generally follow the grade assignment schedule shown below. A curve may be used on the final grade.

A+	97% - 100%	C+	77% - 79%
A	93% - 96%	C	73% - 76%
A-	90% - 92%	C-	70% - 72%
B+	87% - 89%	D+	66% - 69%
B	83% - 86%	D	60% - 65%
B-	80% - 82%	D-	55% - 59%
C+	77% - 79%	F	< 55%

**CEE 486 Schedule:**

No	Day	Date	Topic	Segui Text	Quizzes	Homework
				(Prior to Class)		
1	M		Introduction			
2	W		Structural Loads			1 - Analysis
	M		<b>No Class - MLK Day</b>			
3	W		Material Properties	Chapter 1	Q1-Materials	2 – Reading
4	M		Design Philosophy	Chapter 2		
5	W		Tension Members	Sections 3.1 - 3.6	Q2-Tens. Mem.	3 - Tension Mem
6	M		" "	Sections 3.7 - 3.9		
7	W		" "			4 - Tension Mem
8	M		Fasteners - Bolts	Sections 7.1 - 7.7	Q3-Bolts	
9	W		" "	Sections 7.8 - 7.9		5 - Bolted Conns
10	M		" "			
11	W		Welded connections	Sections 7.10 - 7.11	Q4-Welds	6 - Bolted Conns
	M		<b>No Class - Presidents' Day</b>			
12	W		Welded connections			7 - Welded Conns
13	M		Compression Members	Sections 4.1 - 4.3	Q5-Compr. Mem	
14	W		" "	Sections 4.4 - 4.5		8 – Compression
15	M		" "	Sections 4.6 - 4.7		
16	W		<b>Midterm Test (including Welded Connections)</b>			
17	M		Beams - Bending	Sections 5.1 - 5.6	Q6-Beams	
18	W		" "			9 – Beams
	M		<b>Spring Recess</b>			
	W		<b>Spring Recess</b>			
19	M		Beams - Bending			
20	W		" "			10 - Beam bending
21	M		" "			
22	W		Beams - Shear	Section 5.7	Q7-Shear	11 - Beam Shear
23	M		" "			
24	W		Beams - Deflection	Section 5.8 - 5.9	Q8-Deflect	12 - Beam Defln
25	M		" "			
26	W		Concentrated Loads	Section 5.12	Q9-Conc. Lds.	13 - Beam Design
27	M		" "			
28	W		Economy			14 – Conc. Loads
29	M		Advanced Connections			
30	W		Exam Review			
	F		<b>Final Exam (12:00 - 2:00PM)</b>			