

1. CEE 4310 – Structural Steel Design
2. Course credit hours: 3  
Contact hours per week: 4  
Credit category: Engineering Topics (Significant Design)
3. Course coordinator: Tim Huff
4. Textbook: McCormac and Csernak, *Structural Steel Design*, 6<sup>th</sup> edition, 2018, Pearson  
  
Supplemental materials: AISC Steel Construction Manual, 15<sup>th</sup> edition, 2017

5. Course information:

2020 Catalog description	Design of members and structures in steel. Analysis and design of beams, tension members, compression members, members with combined stresses, and standard connections.
Prerequisite(s)	CEE 3320
Course type	Required

6. Course instructional outcomes:

Course Outcome No.	Course Outcome (CO)	ABET Student Outcome
CO1	Calculate the appropriate load combination based on a variety of loading sources	1, 4
CO2	Calculate net area and effective net area for tension members	1
CO3	Determine the design resistance of a tension member	1
CO4	Determine appropriate effective length ( $L_c=KL$ ) for compression members	1
CO5	Analyze and design (select) compression members	1, 2
CO6	Design compact beams that have full lateral support	2
CO7	Design compact beams with discrete lateral support using the $C_b$ factor	2
CO8	Describe the differences between plastic design and elastic design	1
CO9	Analyze simple bolted and welded connections	1

ABET criterion 3 Student Outcomes addressed by this course:

SO No.	Student Outcome (SO)
3.1	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
3.2	An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors

3.4	An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
-----	--

7. Course topics:

1. Introduction and review (5%)
2. Specifications, properties of structural steels, load and resistance design (5%)
3. Design of tension members (15%)
4. Design of compression members (20%)
5. Beam design (25%)
6. Bending and axial (15%)
7. Connections (15% classes)

Program criteria (curriculum) addressed by this course:

1. Analyze and solve problems in at least four technical areas appropriate to civil engineering
2. Design a system, component, or process in at least two civil engineering contexts
3. Include principles of sustainability in design

8. Additional topics, assignments, or requirements for dual-level (4000/5000) course:  
N/A

9. Date: 01/16/2020