

1. Course Number and Name:

CE 3361 Design of Steel Structures

2. Credits and Contact hours

3 credit hours; 3 lecture hours

3. Instructor's course or coordinator's name

a. Dr. Cesar Tirado

4. Textbook

Structural Steel Design; Jack C. McCormac, Stephen F. Csernak, 6th Edition, Prentice Hall, 2017.

- a. Course notes and homework are posted on Blackboard.
- b. Steel Construction Manual, American Institute of Steel Construction, 15th Edition.

5. Specific Course information

- a. Catalog Description: Concepts of the design of steel structures using the load and resistance factor design (LRFD) philosophy; design members in tension, members in compression, beams, beam-columns, and connections; and design of trusses and frames.
- b. Prerequisite: CE 2343 with a C or better Co-requisite: None.
- c. Required

6. Specific goals of the course

- a. **The students will be able to:** Identify and compute the design loads on a typical steel building (a, e); Identify the different failure modes of steel members in tension, members in compression, and beams, and compute their design strengths (a, e); Select the most suitable section shape and size for members in tension, members in compression, and beams according to specific design criteria (a, c, e); Identify the different failure modes of bolted and welded connections, and determine their design strengths (a, e); Apply relevant AISC provisions to ensure safety and serviceability of structural steel members (a, c, e, f, i); Utilize advanced computer software packages for the analysis and design of steel structures (a, c, e, g, k).

7. Relation to student outcomes: c, e, k, 1, 2, 3, 4

8. Topics Covered:

- a. Introduction to Structural Steel Design, Specifications, Loads and Methods of Design
- b. Analysis and Design of Elements in Tension
- c. Analysis and Design of Axially Loaded Compression Elements
- d. Introduction to Beams, Plastic Analysis and Collapse Mechanisms
- e. Analysis and Design of Bending Elements
- f. Shear and Deflection of Beam Members
- g. Analysis and Design of Members Subjected to Bending and Axial Forces
- h. Connections (Bolted and Welded)