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


a. Course notes and homework are posted on Blackboard.


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)