Course

CE 47500 – Design of Steel Structures

Type of Course

Elective for Civil Engineering Program

Catalog Description

The concepts of structural steel design, tension and compression members, beams, beam-columns, simple and eccentric connections, composite construction, and plate girders, including computer applications.

Credits

3

Contact Hours

3

Prerequisite Courses

CE 31500, CE 37500

Corequisite Courses

None

Prerequisites by Topics

Civil Engineering Materials, Structural Analysis

Textbook


Supplemental Materials


Course Objectives

CE 475 is an introductory course in the design of steel structures. This course is recommended for seniors in the civil engineering program who are interested in learning the design of steel structures. The objectives of this course are to learn the behavior and design of structural steel components (members and connections in two-dimensional (2D) truss and frame structures) and to gain an educational and comprehensive experience in the design of simple steel structures.

Course Outcomes

Students who successfully complete this course will be able to:
1. Identify and compute the design loads on a typical steel building. (a, e)
2. Identify the different failure modes of steel tension and compression members and beams, and compute their design strengths. (a, e)
3. Select the most suitable section shape and size for tension and compression members and beams according to specific design criteria. (a, c, e)
4. Identify the different failure modes of bolted and welded connections, and determine their design strengths. (a, e)
5. Design bolted and welded connections for tension and comp. members and beams. (a, c, e)
6. Apply relevant AISC provisions to ensure safety and serviceability of structural steel elements. (a, c, e, f, i)
7. Utilize advanced computer software packages (SAP2000 and/or ETABS) for the analysis and design of steel structures. (a, c, e, g, k)

Lecture Topics

1. Introduction to Engineering Design, Loads, and Design Codes
2. Analysis and Design of Tension Members
3. Analysis and Design of Axially-Loaded Compression Members
4. Analysis and Design of Beams
5. Analysis and Design of Beam-Columns
6. Simple Connections

Computer Usage

High

Laboratory Experience

None

Design Experience

High

Coordinator

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Date

1 June 2017