PURDUE UNIVERSITY FORT WAYNE | Department of Civil and Mechanical Engineering

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	W.T. Segui, *Steel Design, 4th Edition*, Thomson Engr. Publishing Company, 2007.
Supplemental Materials	American Institute of Steel Construction (AISC). "Steel Construction Manual - Load and Resistance Factor Design (LRFD)," 13th edition, 2005.
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 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: a. Identify and compute the design loads on a typical steel building. (1) b. Identify the different failure modes of steel tension and compression members and beams, and compute their design strengths. (1, 2) c. Select the most suitable section shape and size for tension and compression members and beams according to specific design criteria. (2, 6) d. Identify the different failure modes of bolted and welded connections, and determine their design strengths. (2, 4) e. Design bolted and welded connections for tension and comp. members and beams. (2) f. Apply relevant AISC provisions to ensure safety and serviceability of structural steel elements. (2, 4) g. Utilize computation software packages for the analysis and design of steel structures. (1, 2, 6)
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	Moderate
Laboratory Experience	None
Design Experience	High
Coordinator	Salah Sarhat, Ph.D.
Date	1 July 2018