



**THE OHIO STATE UNIVERSITY**  
COLLEGE OF ENGINEERING

# Intermediate Structural Steel Design

## CIVILEN 5320

**Credit Hours:**

3.00 - 3.00

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**Course Levels:**

Undergraduate (1000-5000 level)

Graduate (5000-8000 level)

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**Course Components:**

Lecture

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**Course Description:**

Design of bolted and welded building connections; structural behavior in the nonlinear range; plastic analysis and design of steel structures.

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**Prerequisites and Co-requisites:**

Prereq: 4320.

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**Course Goals / Objectives:**

- Learn design of bolted and welded building connections according to the AISC Load and Resistance Factor Design (LRFD) Specifications
  - Learn structural behavior in the inelastic range and be able to perform plastic analysis of framed structures
  - Design members of steel structures using the plastic design approach
  - Design lowrise frames using the plastic design approach
  - Perform computer-aided optimal plastic design of two-dimensional steel frame structures
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**Course Topics:**

- Design of bolted building connections
  - Design of welded building connections
  - Fundamental Concepts of Plastic Analysis and Design
  - Plastic Bending of Beams
  - Methods of Plastic Analysis Applied to Framed Structures: Static method; Method of combined mechanisms; Moment balancing method
  - Factors Affecting the Plastic Moment Capacity: Axial forces; Local instability
  - Plastic Design of Continuous Beams
  - Plastic Design of Lowrise Frames
  - Minimum Weight Plastic Design of Steel Frame Structures
  - Computer-Aided Optimal Plastic Design of Steel Frame Structures
  - Computation of Deflections in the Plastic Range
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**Designation:**

Elective