

Course Name:
Steel Design I

Course Number:
20221

Credit:
3

Prerequisite:
Structural Analysis 1

Course Description (Objectives):

The course covers the design of steel members of building structures including beams, columns, bracing, beam-columns.

Course Content (outline):

- Chapter 1: Components of steel structures. Types of Steel and steel sections. Steel physical behavior: stress-strain, fatigue, brittle fracture, corrosion.
- Chapter 2: Design Philosophies: ASD, LRFD. Design codes.
- Chapter 3: Tension Members: Limit states in tension. Net section. Shear lag. Block shear. Brace and gusset design.
- Chapter 4: Compression Members: Limit states in compression. Effective length. Built-Up compression members. Bracing design.
- Chapter 5: Flexural members: Limit states in bending. Lateral support. Beam design: continuous beams, castellated beams, composite beams, built-up beams. Biaxial bending. Shear strength. Deflection control. Concentrated load effects.
- Chapter 6: Beam-Columns: P- Δ effects and effective length. Types of analyses. Frame design.

References:

- Steel Structures: Design and Behavior, C. G. Salmon and J. E. Johnson, Prentice Hall.
- Structural Steel Design, J. C. McCormac, Prentice Hall.
- LRFD Steel Design, W. T. Segui, Thomson- Canada.
- Iranian Building Code, Chapter 10.
- AISC/ANSI 360.

