Department of Civil Engineering

Course Name:

Steel Design I

Course Number: 20-221	**Credit:** 3
Program: Undergraduate	**Course Type:** Technical required
Prerequisite:Structural Analysis I	**Corequisite:** -

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.