Department of Civil Engineering

Course Name:

Advanced Steel Design

Course Number: 20-226	**Credit:** 3
Program: Graduate	**Course Type:** Technical Selective
Prerequisite: -	**Corequisite:** -

Course Description (Objectives):

The course aims to familiarize students with seismic design regulations for steel structures and to develop their skills in analyzing and designing such structures.

Course Content (outline):

- Chapter 1: Principles of stability of compression members in elastic and inelastic states
- Chapter 2: Structural stability analysis, second-order effects in structural analysis, and methods of performing stability analyses
- Chapter 3: Torsion of beams
- Chapter 4: Design of beam-columns
- Chapter 5: Design of beams with variable cross-sections, design of beam-columns with variable cross-sections, and double-web girders
- Chapter 6: Design of composite beams (steel and concrete)
- Chapter 7: Design of composite systems
- Chapter 8: Analysis and design of various shear and moment connections
- Chapter 9: Design of connections for box and HSS (hollow structural section) members
- Chapter 10: Design based on nonlinear analysis
- Chapter 11: Study of lateral load-resisting systems in steel structures and their analysis and design methods
- Chapter 12: High-rise buildings and skyscrapers
- Chapter 13: Design considering fatigue, design of members and connections
- Chapter 14: Effects of rainwater ponding and concentrated roof loads
- Chapter 15: Design of bracing for beams and columns
- Chapter 16: Serviceability considerations in steel structures
- Chapter 17: Structural fire design

- Chapter 18: Quality control of steel structures
- Chapter 19: Evaluation of existing steel structures and quality assurance
- Chapter 20: Special considerations
- Chapter 6: Introduction to various filtering methods

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