MERCURY

# Introduction to Steel Structures, Analysis, and Design

28 February – 4 March 2027
Kuala Lumpur (Malaysia)



Dubai - UAE: +971 4 450 5697
Istanbul - Türkiye: +90 539 599 1206
Amman - Jordan: +962 79 712 3347

MERCURY

# Introduction to Steel Structures, Analysis, and Design

**Ref:** 15315_303956 **Date:** 28 February – 4 March 2027 **Location:** Kuala Lumpur (Malaysia) **Fees:** 4900 Euro

## Introduction:

The Introduction to Steel Structures, Analysis, and Design course will introduce you to the fundamental concepts and methodologies in designing various steel structures. You will learn about design procedures for structural members and joinery, including in-depth knowledge about bolt and welded connection design.

By exploring the advantages of steel structures through practical examples, you will gain proficiency in designing tension and compression members and understand how to employ lacing systems and batten plates effectively. The Introduction to Steel Structures, Analysis, and Design course will also cover essential beam and base design concepts.

This introduction to steel structures, analysis, and design course offers a comprehensive guide to the principles and applications of steel structures in construction. It focuses on the design and analysis of steel structures. This curriculum explores the types of steel structures and their roles in engineering and architecture, especially within steel structures and buildings.

## Targeted Groups:

- Civil Engineers.
- Design Structural Engineers.
- Construction Engineers.
- Supervision Engineers.
- Planners.
- Steel Fabricators.

## Course Objectives

By the end of this introduction to steel structures, analysis, and design course, participants will:

- Acquire familiarity with the importance of steel structures in the design phase.
- Comprehend the diverse loads that can impact steel structures, particularly in oil, gas, and petrochemical plants.
- Learn contemporary technology on risk-based inspection strategies to establish a sound maintenance plan.
- Grasp the intricate details of the pipe rack design.
- Understand the principles behind the design of steel structures supporting machinery.
- Discover composite sections' utility and application in strengthening and repair efforts.

Dubai - UAE: +971 4 450 5697
Istanbul - Türkiye: +90 539 599 1206
Amman - Jordan: +962 79 712 3347

## Targeted Competencies:

At the end of this introduction to steel structures, analysis, and design training, participants will:

- Overview of advanced steel structures.
- Skills for designing steel structures.
- Proficiency in connection design.
- An elementary grasp of Finite Element Analysis FEA software.
- Fundamental approaches to foundation design.

## Course Content:

### Unit 1: Introduction to Steel Structures:

- Weigh the benefits of steel structures against concrete.
- Variety in the application of steel in construction.
- Explore the basics of steel structures and different steel framing systems.
- Analytical approaches in the steel structure analysis.
- Review codes of practice in the design and behavior of steel structures.
- Select suitable steel structural systems for various construction projects.

### Unit 2: Designing of Steel Structures:

- In-depth analysis and design of steel composite beams.
- Analysis and design of composite slabs.
- Considerations for composite beams with web openings.
- Studying USFB ultra-shallow floor beams and their economic advantages.
- Practical exploration of steel Portal Frames commonly used in industrial building construction.

### Unit 3: Connection Design:

- Advanced bolted connection techniques between beams and columns.
- Analysis and design of built-up column
- Analysis and design of multi-story columns
- Technical insights into the design of Crane beams.
- Explore new methods and practices in connection design.

Dubai - UAE: +971 4 450 5697
Istanbul - Türkiye: +90 539 599 1206
Amman - Jordan: +962 79 712 3347

## Unit 4: A Basic Introduction to Finite Element Software:

- Practical training on Abaqus for the analysis of steel structures.
- Guided learning in the fabrication and erection of steel structures.
- Preparation of detailed drawings for steel structure projects.
- Strategies for the protection and preventive maintenance of steel structures.
- Identify and understand damage mechanisms in steel structures.

## Unit 5: Welding Design and Stress Checks:

- Tailor weld joint design geometry to specific processes.
- Incorporate dimensioning and preparation with attention to welding processes.
- Implement tolerances on weld sizes.
- Automation in fabrication: mechanized and robotic processes.
- Focused design considerations for welding, ensuring realistic joint tolerances.
- Special considerations for working with sheet metal parts.

## Conclusion:

This introduction to steel structures, analysis, and design course provides structural steel design training tailored for professionals seeking to deepen their understanding of steel structure design and practice.