



Introduction to Steel Structures, Analysis, and Design

19 - 23 Aug 2024
Madrid (Spain)



Introduction to Steel Structures, Analysis, and Design

Ref.: 15315_303971 **Date:** 19 - 23 Aug 2024 **Location:** Madrid (Spain) **Fees:** 5500 **Euro**

Introduction:

This Design of Steel Structures course will teach you about design procedures for steel structure members and connections. This course will broaden your knowledge of how to design suitable bolts and welded connections for steel structures. You will learn a step-by-step process of designing tension and compression members, including lacing systems and batten plates. You will also learn how to design beams, bases, and more.

Targeted Groups:

- Civil Engineers.
- Design Structural Engineers.
- Construction Engineers.
- Supervision Engineer.
- Planners.
- Steel Fabricator.

Course Objectives:

At the end of this course the participants will be able to:

- Be familiar with the "Steel Structure" design.
- Understand the loads applied on the steel structure in oil, gas, and petrochemical plant.
- Know the modern technology on risk-based inspection for a maintenance plan.
- Be familiar with the pipe rack design.
- Know the design of the steel structure on machines.
- Identify the use of composite sections in strength and repair.

Targeted Competencies:

- Introduction to steel structures.
- Designing of steel structures.
- Connection design.
- A basic introduction to Finite Element software.
- Foundation design.

Course Content:

Unit 1: Introduction to steel structures:

- Advantages of steel over concrete
- Use of steel in different forms in construction
- Different types of the steel framing system
- Analysis of steel structures
- Codes of practice in the design of steel structures
- Selection of the right steel structural system

Unit 2: Designing of steel structures:

- Analysis and design of steel composite beam
- Analysis and design of composite slabs
- Analysis and design of composite beams with web openings
- Analysis and design of USFB ultra-shallow floor beams a new steel beam that is economical
- Analysis and design of steel Portal Frame, most used in the construction of Industrial buildings

Unit 3: Connection design:

- Bolted connections between beam and column using new methods
- Analysis and design of built-up column
- Analysis and design of multi-story columns
- Analysis and design of Crane beams
- New methods of connection

Unit 4: A basic introduction to Finite Element software:

- Basic training on Abaqus, which is highly used in structural engineering companies for the design of steel structures
- Fabrication and erection of steel structures
- Preparation of drawings of steel structures
- Protection and prevention of steel structures
- Understanding of damage caused to steel structures

Unit 5: Welding design and stress checks:

- Weld joint design geometry
- Dimensioning and preparation that takes into account the welding process to be used
- Tolerances on the Size of welds
- Mechanized and robotic fabrication
- Welding design particular attention to setting realistic joint tolerances
- Sheet metal parts



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