



# Foundations of Steel Structures: Analysis, Design, & Sustainability

**Duration:** 5 Days

**Language:** en

**Course Code:** IND14-111

## Objective

:Upon completion of this course, participants will be able to

- Understand the fundamental properties of steel as a construction material.
  - Be proficient in the analysis and design of basic steel structures.
- Apply sustainability principles in the design and construction of steel structures.
  - Gain insights into the latest innovations and best practices in steel structural engineering.

## Audience

:This course is intended for

- Civil engineers
- Structural engineers
- Architects
- Construction professionals who are looking to enhance their understanding of steel structures
- Those involved in the management or supervision of construction projects involving

## Training Methodology

The course adopts a blended learning approach, combining theoretical lessons with practical case studies and hands-on design exercises. Participants will engage in interactive workshops, group discussions, and individual projects, reinforcing learning and promoting critical thinking.

## Summary

This course offers a comprehensive introduction to the principles of steel structures, focusing on analysis, design, and sustainable practices within the civil engineering and construction sectors. Designed for emerging professionals and experienced engineers, it aims to equip participants with the knowledge and skills necessary to confidently approach the challenges associated with steel structure design.

## Course Content & Outline

### Section 1: Introduction to Steel as a Structural Material

- Properties and Characteristics of Steel
- Advantages and Limitations in Construction
- Historical Development and Use in Modern Structures
- Environmental Impact and Sustainability

### Section 2: Fundamental Principles of Steel Structure Design

- Structural Behaviour of Steel Members
- Load and Resistance Factor Design (LRFD) vs. Allowable Stress Design (ASD)
  - Introduction to Eurocodes and British Standards
  - Case Studies: Iconic Steel Structures

### **Section 3: Analysis of Steel Structures**

- Load Analysis: Dead, Live, Wind, and Seismic Loads
- Methods of Structural Analysis: Linear and Non-linear
  - Stability and Buckling of Steel Elements
  - Finite Element Analysis for Steel Structures

### **Section 4: Design of Steel Structures**

- Design of Tension and Compression Members
  - Design of Beams and Columns
  - Connections: Bolted and Welded Joints
  - Fire Resistance and Corrosion Protection

### **Section 5: Sustainability in Steel Structure Design**

- Lifecycle Assessment of Steel Structures
  - Sustainable Design Strategies
  - Recyclability and Reusability of Steel
- Integrating Renewable Energy with Steel Structures

### **Section 6: Advanced Topics in Steel Structures**

- Innovations in Steel Design and Fabrication
- Hybrid Structures: Combining Steel with Other Materials
- Digital Tools in Steel Structure Design (BIM and Beyond)
  - Future Trends in Steel Construction

## Certificate Description

Upon successful completion of this training course, delegates will be awarded a Holistique Training Certificate of Completion. For those who attend and complete the online training course, a Holistique Training e-Certificate will be provided.

Holistique Training Certificates are accredited by the British Assessment Council (BAC) and The CPD Certification Service (CPD), and are certified under ISO 9001, ISO 21001, and ISO 29993 standards.

CPD credits for this course are granted by our Certificates and will be reflected on the Holistique Training Certificate of Completion. In accordance with the standards of The CPD Certification Service, one CPD credit is awarded per hour of course attendance. A maximum of 50 CPD credits can be claimed for any single course we currently offer.

## Categories

Construction & Real Estate, Engineering, Manufacturing

## Tags

Sustainability, Design, Steel Structures, Steel

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