Steel Structures Design Training Course

Professional Development Training Course Outline

Category	Architectural Engineering	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Steel Structures Design Training Course is designed to equip engineers, architects, construction professionals, and project managers with advanced knowledge and practical skills in the analysis, design, detailing, and execution of steel structures. The course integrates modern structural engineering principles with international design standards such as AISC, Eurocode, and IS codes, enabling learners to confidently handle real-world industrial, commercial, and infrastructure projects. With the rapid growth of smart cities, high-rise buildings, industrial plants, and renewable energy structures, expertise in steel design has become a critical requirement in the global construction industry.

This training emphasizes structural stability, load analysis, connection design, finite element modeling, seismic resistance, and sustainable steel construction practices. Participants will gain hands-on exposure to advanced software tools like ETABS, STAAD Pro, SAP2000, and Tekla Structures, ensuring they are job-ready for roles in structural engineering consultancies, EPC companies, and construction firms. The program bridges the gap between theoretical learning and practical implementation, focusing on real-life project scenarios, industry case studies, and compliance with global safety and design standards.

Programme Curriculum

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Course Duration

5 days

Course Objectives

1. Master steel structure design principles and structural analysis techniques
2. Understand load calculation, wind load, seismic load, and dead/live load distribution
3. Apply AISC, Eurocode, and IS 800 design codes effectively
4. Develop expertise in steel connection design (bolted and welded joints)
5. Gain proficiency in 3D structural modeling using STAAD Pro and ETABS
6. Learn industrial steel building design and high-rise steel frameworks
7. Perform structural stability and failure analysis of steel components
8. Design pre-engineered buildings (PEB) and modular steel structures
9. Implement sustainable and cost-effective steel construction solutions
10. Understand earthquake-resistant steel structure design techniques
11. Develop skills in structural detailing and fabrication drawings using Tekla
12. Analyze real-world engineering case studies and construction challenges
13. Prepare for career advancement in structural engineering and EPC industries

Target Audience

1. Civil Engineering Students
2. Structural Engineers
3. Construction Project Managers
4. Architects and Building Designers
5. EPC Industry Professionals
6. Site Engineers and Supervisors
7. Government Infrastructure Engineers
8. Consultancy Firms and Freelancers

Course Modules

Module 1: Fundamentals of Steel Structures

- Properties of structural steel materials
- Types of steel sections and their applications
- Basics of load transfer mechanisms
- Introduction to design philosophies
- Overview of structural stability principles
- **Case Study:** Analysis of a warehouse steel frame failure due to poor load distribution

Module 2: Structural Loads & Analysis

- Dead, live, wind, and seismic loads
- Load combinations as per IS & Eurocode
- Influence line diagrams and load paths
- Basic structural analysis methods
- Introduction to finite element concepts
- **Case Study:** Wind load impact assessment on a coastal industrial structure

Module 3: Steel Connections Design

- Bolted connection design principles
- Welded connection detailing techniques
- Shear, moment, and axial connections
- Gusset plates and base plate design
- Connection failure analysis
- **Case Study:** Failure of bolted joints in a bridge structure due to fatigue

Module 4: Industrial Steel Structures

- Design of industrial sheds and factories
- Crane gantry girder design
- PEB (Pre-Engineered Buildings) concepts
- Roof truss systems and bracing
- Optimization of steel usage
- **Case Study:** Design optimization of a large-scale manufacturing plant

Module 5: High-Rise Steel Structures

- Load distribution in tall buildings
- Lateral stability systems
- Core and frame interaction
- Drift control and deflection limits
- Wind tunnel analysis basics
- **Case Study:** Structural design review of a 40-storey steel tower

Module 6: Earthquake-Resistant Design

- Seismic zones and response spectra
- Ductility and energy dissipation
- Base isolation systems
- Moment-resisting frames
- Retrofitting techniques
- **Case Study:** Earthquake performance evaluation of a steel hospital building

Module 7: Structural Software Applications

- STAAD Pro modeling and analysis
- ETABS building simulation
- SAP2000 dynamic analysis
- Tekla Structures detailing
- BIM integration in steel design

- **Case Study:** Digital modeling of a commercial steel mall using BIM tools

Module 8: Fabrication, Erection & Maintenance

- Steel fabrication workflow
- Erection planning and sequencing
- Quality control and inspection methods
- Corrosion protection techniques
- Maintenance strategies for steel structures
- **Case Study:** Maintenance failure analysis of an offshore steel platform

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

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