American Code Structural Steel Design Course

25 – 29 January 2027
Addis Ababa

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Training Center

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Ref: 561_223779 **Date:** 25 – 29 January 2027 **Location:** Addis Ababa **Fees:** 6000 Euro

Overview

American Code Structural Steel Design Course is a one-week intermediate course for structural and civil engineers, design reviewers, consultants, project engineers, and technical-office teams who leave with a Steel Building Design Package. Participants coordinate structural systems, load paths, IBC requirements, ASCE 7 loads, AISC 360 member design, AISC 341 seismic provisions, stability, connections, calculations, and drawings. The course turns separate checks into a traceable design workflow. Agile Leaders Training Center presents American code structural steel design through applied engineering artifacts.

Who Should Attend

- Teams responsible for selecting structural steel systems and establishing load paths
- Functions calculating design loads, combinations, member actions, and serviceability effects
- Personnel checking steel members, stability, bolted connections, and welded connections
- Groups coordinating wind, seismic, architectural, fabrication, and construction requirements
- Reviewers responsible for calculation notes, design assumptions, drawings, and technical comments

The course assumes participants can perform structural analysis and interpret engineering drawings, and it leaves out introductory statics, software instruction, fabrication qualification, and jurisdiction-specific approval procedures.

Departments and Industries

The course supports departments and industries responsible for steel building analysis, design, coordination, and technical review.

- Structural and civil engineering design offices
- Building, industrial, energy, transport, and logistics projects
- Steel fabrication, erection, and construction engineering
- Project management, technical offices, and design assurance
- Asset development, facilities engineering, and engineering consultancy

Learning Objectives

By the end of this course, participants will be able to:

- Analyze structural systems, load paths, design criteria, and code interfaces
- Apply ASCE 7 loads and combinations within an IBC design basis
- Evaluate AISC 360 tension, compression, flexure, shear, and combined-action checks
- Diagnose frame stability, second-order effects, and serviceability conditions
- Build bolted, welded, seismic, and wind coordination design criteria
- Develop a Steel Building Design Package

Course Agenda

Day 1: Design Basis and Structural Systems

- IBC Structural Design Basis Checklist
- Steel Framing System Selection Matrix
- Gravity and Lateral Load-Path Diagram
- ASCE 7 Risk and Design-Criteria Register
- AISC 303 Design Responsibility Matrix

Day 2: Loads, Analysis, and Stability

- ASCE 7 Load Identification Worksheet
- Strength and Allowable-Stress Load Combination Table
- Structural Analysis Assumption Register
- AISC 360 Stability Analysis Decision Tree
- Second-Order Effects and Serviceability Check Sheet

Day 3: Steel Member Design

- AISC 360 Tension Member Design Check
- AISC 360 Compression Member Buckling Check
- AISC 360 Flexural Member Limit-State Check
- Shear, Torsion, and Combined-Action Interaction Review
- Member Selection and Utilization Schedule

Day 4: Connections and Lateral Coordination

- Bolted Connection Limit-State Calculation
- Welded Connection Strength and Detailing Check
- Connection Force-Transfer and Constructability Map
- AISC 341 Seismic System Coordination Checklist
- Wind-Resisting System and Drift Review

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Day 5: Structural Steel Design Practice

- Exercise: Establish the Design Basis and Load Path
- Exercise: Assemble Loads, Combinations, and Stability Checks
- Exercise: Verify Members and Connection Criteria
- Exercise: Coordinate Calculation Notes and Design Drawings
- Capstone Exercise: Steel Building Design Package

Practical Exercises

The course uses suggested activities to connect code requirements, engineering calculations, design review, and documentation.

- Suggested activity: select a framing system and record the design basis, risk criteria, gravity path, lateral path, responsibilities, and assumptions.
- Suggested activity: assemble loads and combinations, test stability and serviceability, and document analysis decisions for an industrial or commercial frame.
- Suggested activity: check representative tension, compression, flexural, shear, bolted, and welded components and record governing limit states.
- Suggested activity: integrate seismic and wind coordination, calculations, comments, drawing interfaces, and review evidence in a Steel Building Design Package.

FAQs

Who suits the American code structural steel design course and what does it assume?

It suits engineering teams responsible for steel building design and review, and assumes they can perform structural analysis, use engineering calculations, and interpret structural drawings.

How does American code structural steel design differ from structural analysis training?

American code structural steel design applies analysis results to code-defined loads, combinations, member limit states, stability, connections, seismic coordination, serviceability, calculations, and drawings, while general structural analysis training concentrates on modeling structural response.

How do IBC, ASCE 7, and AISC 360 work together in steel design?

IBC establishes the building-code basis, ASCE 7 supplies design loads and combinations, and AISC 360 provides requirements for structural steel member and system design using strength or allowable-stress methods.

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Why is stability analysis important in structural steel design?

Stability analysis accounts for member and frame behavior, effective stiffness, second-order effects, imperfections, bracing assumptions, and the interaction between applied forces and structural deformation.

What belongs in a Steel Building Design Package?

The package records the design basis, systems, load paths, criteria, loads, combinations, analysis assumptions, member checks, connection criteria, lateral coordination, calculation notes, drawing interfaces, review comments, and resolutions.

Conclusion

Participants take back a Steel Building Design Package linking code criteria, load paths, analysis assumptions, member and connection checks, lateral coordination, calculations, and drawings. It changes isolated calculations into a traceable engineering review sequence. The package supports design decisions without replacing project-specific analysis, professional judgment, or applicable approval processes.