

Structural Design

A comprehensive structural analysis and design course using STAAD.Pro, covering structural modeling, RCC and steel design, foundation engineering, wind and seismic analysis, finite element modeling, and IS code-based documentation for residential, commercial, industrial, and infrastructure projects.

Duration 6 Months	Training Mode Offline Classroom Training	Certification Industry Certificate	Practical Labs 100% Hands-on
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Tools & Tech: STAAD.Pro • IS 456 • IS 800 • IS 875 • IS 1893

Detailed Course Curriculum & Modules

MODULE 01 Structural Engineering Fundamentals - Types of Structures, Structural Systems & Components - Load Path Concept, Stability & Building Codes - Stress & Strain, Elastic & Plastic Behavior - Bending Moment, Shear Force, Axial Force & Torsion - Deflection & Structural Safety Concepts	MODULE 02 STAAD.Pro Interface & Geometry Modeling - STAAD.Pro Interface, Project Setup & Modeling Workflow - Structure Wizard, Navigation & Display Options - Node, Beam, Column & Plate Modeling - Grid Systems, Truss & Space Frame Modeling - Multi-Storey Building & Industrial Structure Modeling
MODULE 03 Material, Section & Support Properties - Concrete & Steel Grades, Elastic Properties & Density - Sections: Rectangular, Circular, T, I, Channel, Angle & Box - Built-up Sections, Custom Sections & Property Assignment - Fixed, Pinned, Roller, Spring & Elastic Supports - Member Releases, Connection Modeling & Stability Checks	MODULE 04 Load Application & Combinations - Dead Load, Live Load, Floor Load & Member Load - Point Load, UDL, Trapezoidal & Temperature Loads - Vehicle Loads, Crane Loads & Moving Load Basics - IS Code Load Combinations: Ultimate & Service - Factored Loads, User-Defined Combinations & Verification
MODULE 05 Structural Analysis - Linear Static Analysis & P-Delta Analysis - Second Order, Buckling & Dynamic Analysis Basics - Member Force Analysis & Reaction Analysis - Bending Moment, Shear Force & Axial Force Diagrams - Result Interpretation & Structural Optimization	MODULE 06 RCC Design (IS 456) - IS 456 Design Parameters & Safety Factors - Beam, Column, Slab & Footing Design - Staircase Design & Shear Wall Basics - Reinforcement Detailing & Design Optimization - RCC Design Reports Generation
MODULE 07 Steel Structure Design (IS 800) - IS 800 Design Parameters - Steel Beam & Column Design - Truss, Purlin & Bracing Design - Industrial Shed Design & Connection Basics - Steel Design Optimization	MODULE 08 Foundation, Plate & Advanced Modeling - Isolated, Combined & Raft Foundation Design - Pedestal, Base Plate & Soil Bearing Capacity - Plate & Slab Modeling, Mesh Generation & Stress Analysis - Finite Element Modeling (FEM), Element Types & Result Interpretation
MODULE 09 Wind & Seismic Analysis - Wind Load Calculation per IS 875 (Part 3) - Wind Pressure, Direction Cases, Drift & Design Checks - Seismic Analysis per IS 1893: Zones, Factors & Base Shear - Equivalent Static Method & Storey Drift - Response Spectrum Method, Mode Shapes & Modal Analysis	MODULE 10 Design Verification & Documentation - Deflection, Drift, Stress & Utilization Ratio Checks - Serviceability, Strength & Code Compliance Verification - Design Reports, Calculation Sheets & Material Reports - Member Schedules, Reinforcement Reports & PDF Export - IS Codes: IS 456, IS 800, IS 875, IS 1893 & IS 13920

Practical Projects & Industry Capstones

- G+2 Residential Building Analysis
- Multi-Storey RCC Building Design
- Commercial Office Structure
- Industrial Steel Shed Design
- Roof Truss Design
- Warehouse Steel Structure
- Foundation Design Project
- Wind & Seismic Analysis Project
- Complete Structural Design Documentation

■ Industry Certification Authorized certificate verified globally via online portal.	■ 100% Placement Support Resume review, mock interviews, and recruiter connections.	■ Lab Access & Mentorship Dedicated workstation lab hours with expert guidance.
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