



**IFS ACADEMY**

Training For The Future!!



**Bentley  
Institute**

Academic Service Partner

## **Structural Design & Analysis using Bentley STAAD.Pro**

### **Instructor-Led Online Training**

**Course Curriculum (Duration: 60 Hrs.)**

#### **Chapter 1: Before you start using Bentley STAAD.Pro**

- a. Understanding Unit Conversion Tables
- b. Overview of Structural Design & Analysis
- c. Stresses and Strains
- d. Shear Force & Bending Moment Diagrams
- e. Introduction to Types of Structures
- f. Overview of Steel, Concrete and Foundation Design
- g. Introduction to Finite Element Analysis

#### **Chapter 2: Introduction to STAAD.Pro**

- a. About Bentley STAAD.Pro
- b. Starting STAAD.Pro
- c. Graphical User Interface
- d. Starting a New Project
- e. Working with User Interface:
  - Menu Bars
  - Tool Bars
  - Tabs
  - Snap Node / Beam Window
  - Data Area
  - Main Window
- f. Opening and Existing Project
- g. Saving a Project
- h. Configuring Units
- i. Keyboard Shortcuts
- j. Importing Model in STAAD.Pro
- k. Coordinate Systemes

#### **Chapter 3: Structural Modeling**

- a. Adding Beams using Tools
- b. Creating Beams (Colinear, Along Axes)
- c. Creating Plates
- d. Creating Surfaces
- e. Creating Solid Elements
- f. Creating Structure
- g. Stretching and Intersecting Members
- h. Merging Members and Nodes
- i. Renumbering Nodes, Members and Elements
- j. Splitting and Breaking Beams
- k. Cutting Sections

#### **Chapter 4: Material Constants and Section Properties**

- a. Material Constants
- b. Creating and Editing Material Properties
- c. Assigning Materials to the Structure

[www.ifsacademy.org](http://www.ifsacademy.org)

- d. Orthotropic Materials
- e. Section Properties
  - Prismatic Sections
  - Tapered Sections
  - Steel Sections
  - Steel Joist and Joist Girders
  - Plate/Surface Thickness

#### **Chapter 5: Member Specifications and Supports**

- a. Node Specification
- b. Member Specifications
  - Release
  - Offset
  - Property Reduction factors
  - Cable
  - Truss
  - Compression
  - Tension
  - Inactive
- c. Plate Specifications
  - Release
  - Ignore Inplane Rotation
  - Plane Stress
- d. Supports:
  - Fixed
  - Pinned
  - Fixed But
  - Enforced
  - Enforced But
  - Multilinear Spring
  - Foundation
  - Inclined
  - Tension/Compression Only Springs

#### **Chapter 6: Loads**

- a. Types of Loads: Selfweight, Nodal, Member, Area, Floor, Plate, Surface and Solid,
- b. Load Generation
- c. Load Combinations

#### **Chapter 7: Performing Analysis**

- a. Pre Analysis
  - Problem Statistics
  - Joint Coordinates
  - Member Information
  - Material Properties
  - Support Information
  - Element & Solid Information
- b. Performing Analysis

#### **Chapter 8: Post Processing & Report Creation**

- a. Post Analysis Print
  - Load Lists
  - Joint Displacement
  - Member Forces
  - Support Reactions
  - CG

- Mode Shapes
  - Section Displacement
  - Analysis Results
  - Member Stresses
  - Element Forces/Stresses
- b. Viewing Results
  - c. Output File
  - d. Post Processing Mode

**Chapter 9: Analysis Case Studies / Workshops**

- a. RCC Design & Analysis (Beams and Columns)
- b. Steel Design & Analysis (Frames and Trusses)
- c. Miscellaneous Analysis
- d. Practice examples for Students

\*\*\*\*\*

IFS Academy, Pune

Phone: +91-20-6400 7296, Email: [training@ifsacademy.org](mailto:training@ifsacademy.org),

Visit Us At: [www.ifsacademy.org](http://www.ifsacademy.org)