IFS ACADEMY
Training For The Future!!

Bentley Institute
Academic Service Partner

Structural Design & Analysis using Bentley STAAD.Pro

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 Stains
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
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

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