Consulting and Training | Reach New Heights

Course Name

Civil Engineering Design

Sector Name

Civil Engineering

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Civil Engineering Design

Course Introduction

Civil Structural Engineering

Civil Structural Engineering for power plants deals with the analysis and design aspects, the basic purpose of which is to ensure a safe, functional, and economical structure. While designing, the designer constantly interacts with specialists like architects, operational managers, etc. Once the design is finalized, the implementation takes the involvement of people to handle aspects like statutory approvals, planning, quality assurance, material procurement, etc. The entire exercise can be undertaken in a highly coordinated way if everyone involved understands the 'project language', which is a combination of designs and specifications.

Thunder and the language fully, it is necessary to appreciate the principles of structural analysis and design, and a course on this topic comes in handy here. Participants of this workshop will gain advanced knowledge of structural engineering that includes principles of analysis of structures and their application, behavior of materials under loading, selection of construction materials, and design fundamentals for RCC and steel structures. The emphasis has been kept on the determination of nature and quantum of stress developed under loads, and the way structures offer resistance to it.

Being the most widely used construction materials, RCC and steel have been covered in detail. And the Training is summarized in the following outlines.

For those engineers with limited design experience, the course will provide a sample illustration of real structures that may assist the designer in understanding StaadPro and applying it to different types of buildings. Different types of editing data for StaadPro. will be discussed, and the easiest way to deal with it will be reached.

The wide range of issues to be discussed revolves around the use of StaadPro in the structural Analysis of different types of structures. The examples to be used would vary from the typical two-dimensional beams and frames to the three-dimensional multistory frames to special systems such as space frames and three-dimensional slabs and raft foundations. Throughout the course, the instructor shall start from the basics to allow ensuring the full participation and comprehension of all attendants, bearing in mind variations in background from education to practice.

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Target Audience

✓ Civil engineers.
✓ Experienced Civil Engineers Seeking Professional Development
✓ Architects and Urban Planners
✓ Entrepreneurs in the Construction Industry
✓ Project Managers in the Construction Industry

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Learning Objectives

- ✓ Fully understand the role of the civil structural engineer in power plat generation field.
- ✓ Comprehend the behavior of structural members under loading
- ✓ Understand the concept of stress functions like tension, Compression, shear and bending
- ✓ Use the basic concepts for analysis of statically determinate and indeterminate structures
- ✓ Analyze deformation of members under loading
- ✓ Understand the significance of material properties in design
- ✓ Undertake basic design of Reinforced Cement Concrete Structures
- ✓ Undertake basic design of Steel Structures

Quantity Surveys & Reinforcement Details The course also provides an overall look over StaadPro. V8i. It demonstrates the steps to be followed to produce the structural analysis of many types of buildings concentrating over the different results generated from the program, and how to read them, view them, and finally generate the necessary reports from them

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Course Outline

✓ DAY 01

Introduction to Structural Engineering Principles of Strength Of Materials

- ✓ 1.1 Introduction to the finite element method.
- ✓ 1.2 Presentation of some available multi-purpose finite element computer packages used in the design market.
- ✓ 1.3 Introduction to StaadPro. V8i.
- ✓ 1.4 Different methods of analysis.
- ✓ 1.5 Structural Layout
- ✓ 1.6 Sectional properties
- ✓ 1.7 Deflection & deformation
- ✓ 1.8 Structural Analysis
- ✓ 1.8.1 Determinate & indeterminate structures
- ✓ 1.8.2 Determination of stress functions (direct, bending & shear stresses)
- ✓ 1.8.3 Analysis of statically determinate structures
- ✓ 1.8.4 Analysis of statically indeterminate structures

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Course Outline

✓ Day 02

V8i & Geometry

- ✓ 2.1 Creating a new file with StaadPro. V8i.
- ✓ 2.2 Recognizing StaadPro. V8i, screen (Menu bar, tool bar, title bar, modes ...etc.
- ✓ 2.3 Dealing with an existing file.
- ✓ 2.4 Using Structure Wizard to create Geometry
- ✓ 2.5 Using drafting to create Geometry
- ✓ 2.6 Using Copy/Cut with Paste to create Geometry
- ✓ 2.7 Using a Spreadsheet to Create Geometry
- ✓ 2.8 Using DXF importing to create Geometry

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Course Outline

✓ **DAY 03**

3.1 Analysis of two-dimensional continuous beams.

- ✓ 3.2 Loads affecting beam elements.
- ✓ 3.3 Examples
- ✓ 3.4 Analysis of two-dimensional frames and trusses.
- ✓ 3.5 Loads affecting frames.
- ✓ 3.6 Examples.
- ✓ 3.7 Design Philosophies
- ✓ 3.7.1 Material behavior under stress
- ✓ 3.7.2 Working stress design
- ✓ 3.7.3 Limit state design
- ✓ 3.7.4 Loads

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Course Outline

✓ Day 04

4.1 Analysis of three-dimensional frames and trusses.

- ✓ 4.2 Loads affecting frames and trusses.
- ✓ 4.3 Examples
- ✓ 4.4 Analysis of plate elements (slabs, flat slabs)
- ✓ 4.5 Loads affecting plate elements.
- ✓ 4.6 Examples.
- ✓ 4.7 Wind and Seismic Loading Calculations Using IBC-03 and ASCE7-02
- ✓ 4.8 Staad manual: Assigning loads
- ✓ 4.9 Slab, Win,d and Moving loads Staad tutorial Automatic load generations Structural analysis Creating Load
- ✓ 4.10 Combinations Staad demo Concrete Design
- ✓ 4.11 Column and Beam design RC Designer
- ✓ 4.12 Slab Design
- ✓ 4.13 Design Procedure of Steel Structures
- ✓ 4.13.1 Materials & properties
- ✓ 4.13.2 Stress behavior
- ✓ 4.13.3 Methods & design of fastenings
- ✓ 4.13.4 Design of beams
- ✓ 4.13.5 Design of columns & struts
- ✓ 4.13.6 Design of tension members
- ✓ 4.13.7 Design of trusses
- ✓ 4.13.8 Design of built-up sections

✓ 4.13.9 Limit state design

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Course Outline

✓ **Day 05**

5.1 Dealing with output data

- ✓ 5.2 Case study
- ✓ 5.3 Design Procedure Of Reinforced Cement Concrete (RCC) Structures
- ✓ 5.3.1 Material & components
- ✓ 5.3.2 Stress behavior
- ✓ 5.3.3 Ultimate & permissible stresses
- ✓ 5.3.4 Design of beams & slabs
- ✓ 5.3.5 Design of walls & columns
- ✓ 5.3.6 Design of frames

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Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
April 19, 2027	April 23, 2027	5 days	4250.00 $	UAE , Dubai
Aug. 30, 2027	Sept. 3, 2027	5 days	4950.00 $	France , Paris
Dec. 21, 2026	Dec. 25, 2026	5 days	4250.00 $	UAE , Dubai
Jan. 17, 2027	Jan. 21, 2027	5 days	4250.00 $	KSA , Riyadh

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