**AutoCAD and STAAD.Pro**

Softpro's AutoCAD and STAAD.Pro course package aims at giving expert-level knowledge to the Trainees which leads them to become highly skilled in their software knowledge with the use of the trending software in Civil Engineering.

You will Learn:

Basics of AutoCAD, Drafting tools, Dimensioning tools, Layer Tools, Building plans, Analysis and Design of Beams, Slab and Columns, Framed Structure, RCC Structure, Stair cases, Steel Structures, Water Retaining Structures, Bridges, Foundations.

**Training Includes:**

AutoCAD 2D modelling

Modelling of Structures

Complete Structural Design

Mini Projects

**Course Curriculum**

**1. Getting Started with AutoCAD**

Starting the Software

User Interface

Working with Commands

Cartesian Workspace

Opening an Existing Drawing File

Viewing Your Drawing

Saving Your Work

**2. Basic Drawing & Editing Commands**

Drawing Lines

Erasing Objects

Drawing Lines with Polar Tracking

Drawing Rectangles

Drawing Circles

Undo and Redo Actions

Using Running Object Snaps

Using Object Snap Overrides

Polar Tracking at Angles

Object Snap Tracking

**3. Making Changes in Your Drawing**

Selecting Objects for Editing

Moving Objects

Copying Objects

Rotating Objects

Scaling Objects

Mirroring Objects

Editing with Grips

**4. Organizing your Drawing with Layers**

Creating New Drawings with Templates

What are Layers?

Layer States

Changing an Object’s Layer

**5. Advanced Object Type**

Drawing Arcs

Drawing Polylines

Editing Polylines

Drawing Polygons

Drawing Ellipses

**6. Getting Information from Your Drawing**

Working with object Properties

Measuring Objects

Advanced Editing Commands

Trimming and Extending Objects

Sketching Objects

Creating Fillets and Chamfers

Offsetting Objects

Creating Arrays of Objects

**7. Inserting Blocks**

What are Blocks?

Inserting Blocks

Working with Dynamic Blocks

Inserting Blocks with Design Center

Inserting Blocks with Content Explorer

**8. Setting Up a Layout**

Printing Concepts

Working in Layouts

Copying Layouts

Creating Viewports

Guidelines for Layouts

**9. Printing Your Drawing**

Printing Layouts

Printing from the Model Tab

**10. Text**

Working with Annotations

Adding Text in a Drawing

Modifying Multiline Text

Formatting Multiline Text

Adding Notes with Leaders to Your Drawing

Creating Tables

Modifying Tables

**11. Hatching and Adding Dimensions**

Hatching

Editing Hatches

Dimensioning Concepts

Adding Linear Dimensions

Adding Radial & Angular

**12. Overview of Structural Analysis and Design**

Calculating Shear Force and Bending Moment values for various supports and load types

Introduction to STAAD.Pro V8i

STAAD Editor

**13. Co-ordinate Systems**

Global Vs Local

Creating a New Project in STAAD.Pro

Units

Model Generation

Creating Nodes & Members

Select Menu

**14 Model Editing Tools**

Translational Repeat

Circular Repeat

Move

Mirror

Rotate

Insert Node

For a Single Member

For Multiple Members

Add Beam

Point to Point

Between Midpoints

Perpendicular Intersection

Curved Member

**15 Model Editing Tools**

Connect Beams Along

Stretch Selected Members

Intersect Selected Members

Merge Selected Members

Creating Models by using Structure Wizard

**16. Support Specification**

Member Property Specification

Member Offset

Material Specification

Group Specification

**17. Loading**

Creating a Primary Load

Adding Selfweight

Nodal Load

Member Load

Uniform Force and Moment

Concentrated Force and Moment

Linear Varying Load

Trapezoidal Load

Hydrostatic Load

Pre/Post Stress

Area Load

Floor Load

Wind Load

Creating Load Combination

Automatic Load Combination

Edit Auto Load Rules

Moving Load Reference Load

Repeat Load

**18. Introduction to Analysis**

Perform Analysis

Overview of Output

Pre-analysis Print

Post-analysis Print

Inactive or Delete Specification

General Guidelines for Design

Concrete Design in STAAD.Pro

Column Design

Beam Design

RC Designer

Beam Design

Column Design

**19. Seismology**

Introduction

Terminologies

Standards for Earthquake Design

General Principals for Earthquake Design

Finding the Lateral Force (manual calculation)

Finding the Lateral Force by using STAAD.Pro

Dynamic Analysis

Response Spectrum Analysis

Cylindrical and Cylindrical Reverse Co-ordinate Systems

**20. Introduction to FEM**

FEM Modelling in STAAD.Pro

Snap Plate

Add Plate

Create Infill Plates

Generate Surface Meshing

Generate Plate Mesh

Parametric Modelling

Member Truss

Creating FEM models by using Structure Wizard

Adding Plate Thickness

Plate Load

Pressure on Full Plate

Concentrated Load

Pressure Load

Trapezoidal Load

Hydrostatic Load

Element Joint Load

**21. Structural Design**

Water Tank Design

Slab Design

One-way Slab

Two-way Slab

Staircase Design

Shear wall Modelling and Design

Solid Modelling and Analysis

**22. STAAD.Beava**

Cable Member Specification

Tension / Compression Specification

Table Member Property

Steel Design in STAAD.Pro

Interactive Steel Design

Design of Overhead Transmission Line Towers

Pushover Analysis

**23. Foundation Design**

Isolated Footing

Combined / Strip Footing Tool Kit

Isolated Footing

Combined Footing

Mat Foundation

Pile Cap Design

**24. Importing CAD Models**

Report Setup

Plotting from STAAD.Pro

Final Project

**AutoCAD and Solidworks**

Softpro's AutoCAD and Solidworks course package aims at giving expert-level knowledge to the Trainees which leads them to become highly skilled in their software knowledge with the use of the trending software in Mechanical Engineering.

You will Learn:

* Basics of AutoCAD, Drafting tools, Dimensioning tools, Layer Tools, Machine Drawings, CAD & CAM, Machine Parts Design, Sketcher Tools, Assembly Design.

**Training Includes:**

AutoCAD 2D and 3D modelling

Solid Modelling

Part and Assembly Design

Mini Projects

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Formatting Multiline Text

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Creating Tables

Modifying Tables

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Printing Layouts

Printing from the Model Tab

12. **Introduction to CAD, CAM**

Features of SolidWorks,

Various products available in SolidWorks for Product Design,

SolidWorks Graphical User Interface - Feature manager design tree,

Callouts, Handles, Confirmation corner, mouse buttons,

keyboard shortcuts, Command Manager,

Hardware and Software requirements, SolidWorks Task Scheduler,

13**. SKETCHER**

Sketch Entities – Inference line, Centerline line, Line, Circle, Arc,

Ellipse, Rectangle, Slots, Polygon, Parabola, Ellipse, Partial Ellipse,

Spline, Spline tools, Spline on surface, Equation driven curve, Points,

Text, Construction geometry, Snap, grid,

Sketch Tools - Fillet, Chamfer, Offset, Convert entities, Intersection

curve, Face curve, Trim, Extend, Split, Jog Line, Construction

Geometry, Mirror, Dynamic Mirror, Move, Copy, Rotate, Scale,

Stretch, Sketch pattern , Polygon,Make path, Close Sketch To Model,

Sketch picture, Check Sketch for Feature, Area hatch/Fill

Blocks – Make block, Edit block, Insert block, Add/Remove Entities,

Rebuild, Save, Explode

Relations - Adding Sketch Relation, Automatic relations,

Dimensioning - Smart, Horizontal, Vertical, Ordinate, Horizontal

ordinate, Vertical ordinate, Align ordinate, Fully define sketch. Sketch

Diagnosis, SketchXpert, 3D Sketching, Rapid Sketch.

**14. PART MODELING**

Part Modeling Tools

Creating reference planes

Creating Extrude features – Direction1, Direction2, From option,

Thin feature, Applying draft, Selecting contours

Creating Revolve features – Selecting Axis, Thin features, Selecting

contours

Creating Swept features-Selecting, Profile and Path,

Orientation/twist type, Path Alignment, Guide Curves, Start/End

tangency, Thin feature

Creating Loft features – Selecting Profiles, Guide curves, Start/End

Constraints, Centerline parameters, Sketch tools, Close loft.

Selecting geometries – Selection Manager, Multiple Body concepts

Creating Reference - points, axis, coordinates

Creating curves -

Split curve, Project curve, Composite curve, Curve through points,

Helix and Spiral

Creating Fillet features

Inserting Hole types

Creating Chamfer

Creating Shell

Creating Rib

Creating Pattern - Linear pattern, Circular pattern, Sketch driven

pattern, Curve driven pattern, Table driven pattern, Fill pattern, mirror

Advanced Modeling Tools- Dome, Free form, Shape feature,

Deform, indent, Flex

Session 8 Inserting Fastening features- Mounting boss, snap hook, Snap hook

groove, Vent

Environment & Utilities - Working with views and manipulating

views, Trouble shooting

Inserting Library feature, Adding Configuration, Inserting Design

table, System options, Measuring Geometries, Calculating Mass

Properties, Feature Statistics, Working With Equations

**15. ASSEMBLY MODELING**

Assembly Modeling Tools

Introduction to Assembly Modeling & Approaches – Top down and

Bottom up approach

Applying Standard Mates- Coincident, Parallel, Perpendicular,

Tangent, Concentric, Lock, Distance, Angle.

Applying Advanced Mates – Symmetric, Width, Path Mate,

Linear/Linear Coupler, Limit Mate.

Applying Mechanical Mates – Cam, Hinge, Gear, Rack Pinion,

Screw, Universal Joint.

Applying Smart mates

Applying Mate reference

Manipulating Components - Replacing Components, Rotating

Components, Move Components, Collision Detection, Physical

Dynamics, Dynamic Clearance, Detecting Interference

Creating Pattern - Assembly Pattern, Mirror

Creating Explode Views

Top Down Design – Layout Sketch, Work Part In the Context of an

assembly.

Smart Components, Smart Fasteners, Physical Simulation

**16. DRAFTING**

Generating Drawing Views

Introduction To Angle Of Projection

Generating Views - Generating Model View, Projected Views,

Inserting Standard 3 View

View creation relative to model, Inserting predefined views, empty

views, Auxiliary Views, Detailed Views, Crop view, Broken –Out

Section, Broken Views, Section View, Aligned Section View,

Alternate Position View, Working assembly specific view, Drawing

properties, Manipulating views

Creating Dimensions – Smart, Horizontal, Vertical, Baseline,

Ordinate, Horizontal Ordinate, Vertical Ordinate, Chamfer, Attach

Dimensions, Align Collinear/Radial, Align Parallel/Concentric,

Model Dimensions, Auto dimension, DimXpert, Annotations, Spell

Inserting Annotations - Datum Features, Geometric Tolerance,

Surface Finish, Jog Leaders, Hole Callout, Datum Target, Dowel Pins,

Area Hatch, Cosmetic Thread, Balloon, Centre Mark, Centre

Lines, Layers, Working With Tables, Bill Of Materials, Hole Table,

Sheets And Templates, Sheet Format.



