



IFS ACADEMY

Training For The Future!!

IFS Academy Certified Design Engineer Program

(Duration: 6 Months)

(With 100% Placement Assistance)

Course Curriculum

Overview:

This course is designed for fresh Diploma / B.E. / M.E. / M.Tech. Mechanical Engineers and CAD Working Professionals who wish to start their career in Engineering Design as Design Engineer / CAD Engineer.

Course begins with review of Engineering Design Fundamentals followed by Geometric Dimensioning & Tolerancing (GD&T) training as per ASME standards. Students will be trained on CAD Softwares like AutoCAD, Creo, CATIA V5 and NX CAD with hands on projects on industry oriented domains.

Expert lectures / seminars / workshops shall be arranged on industry domains by Industrial Experts followed by Soft Skills Training.

➤ **Basics of Engineering Design & Materials**

Free body diagrams and equilibrium; trusses and frames; virtual work; Stress and strain, stress-strain relationship and elastic constants, plane stress and plane strain, shear force and bending moment diagrams; bending and shear stresses; deflection of beams; torsion; Free and forced vibrations; Design for static and dynamic loading; failure theories; fatigue strength and the S-N diagram; Properties of engineering materials, yield criteria.

➤ **Basics of Engineering Drawing**

Dimensioning Management, Projections, Limits, Fits & Tolerances, Drawing Reading, Different Standards, Manufacturing Processes, Machining Operations.

➤ **Geometric Dimensioning & Tolerancing (GD&T)**

What is GD&T? Drawing, Dimensioning System, GD&T Symbols, Form Tolerances, Datums, Orientation Tolerances, Location Tolerances: Position, Runout, Profile, Concentricity & Symmetry Tolerances.



(In-Finite Solutions ATC) 1

➤ **Industry Domain Oriented Lectures / Seminars by Industrial Experts on:**

- Special Purpose Machines (SPM)
- Tool, Jigs & Fixture Design
- BIW Fixture Design
- DFMA, Reverse Engineering
- Casting, Sheet Metal
- Forging and Machining Processes
- Plastics: Interior and Exterior Trims
- Surfacing
- Automotive Seating System

1. Autodesk Authorised Training in AutoCAD for Mechanical Engineers

Duration = 40 Hrs.

Getting started, Object Property & Layer Management, Drawing Geometry, Tools for Creating Key Geometry, Tools for Manipulating Geometry, Mechanical Part Generators, Creating Drawing Sheets, Dimensioning and Annotating Drawings, Bill of Materials, Parts Lists and Balloons, File Management.

2. PTC Authorised Training (In-Finite Solutions ATC) Program in Creo (formerly known as Pro/E WF)

Duration = 80 Hrs.

Introduction & Understanding to Creo Parametric Concepts, Using Creo Parametric Interface, Selecting & Editing of Geometry, Features, Models, Creating Sketcher Geometry & Using Sketcher Tools, Using Sketches & Datum Features, Creating Extrudes & Revolves, Creating Holes, Shells, Draft & Patterns, Creating Rounds, Chamfers & Using Layers, Assembling with Constraints, Exploding, Replacing Components, Cross-Sections in Assemblies, Advanced Selection, Creating Sweeps and Blends, Sweeps with Variable Sections, Helical Sweeps & Swept Blends, Relations, Parameters & Family Tables, Groups, Copy, Mirror & UDF's, Measuring, Inspecting Models & Seeking Help, Capturing, Managing Design Intent & Resolving Failures, Introduction to Flexible Modeling, Editing, Transformations & Recognition in Flexible Modeling, Component Interfaces, Flexible Components, Restructuring, Simplified Reps, Creating and Using Assembly Structure and Skeletons, Sheetmetal Design Process & Fundamentals, Creating Primary & Secondary Sheetmetal Wall Features, Bending, Unbending & Modifying Sheetmetal Models, Introduction, Creating New Drawings & Drawing Views, Adding Model Details & Tolerance Information to Drawings, Adding Notes, Symbols, Tables, Balloons & Layers in Drawings, Surface Modeling Overview, Advanced Datum Features, Basic & Boundary Blend Surfaces, Surface Analysis Tools, Extending, Trimming & Manipulating Surfaces, Creating and Editing Solids using Quilts, Introduction & Understanding Freeform Surface Modeling Concepts,



Creating Curves & Developing Surfaces in Freeform Surface Modeling, Introduction to Creo Direct & Creating Sketches in 2-D Mode, Creating Features & Assemblies in Creo Direct, Selecting, Modifying, and Reusing 3-D Geometry in Creo Direct.

Case Study & Tool Test: Student has to complete any one live project case study and submit report of the same followed by Tool Test.

3. Dassault Systemes Authorised Certified Training Program in CATIA V5

Duration = 80 Hrs.

Introduction to CATIA, Profile Creation, Basic Features, Additional Part Features, Dress-up Features, Reusing Data, Finalizing Design Intent, Assembly Design, Designing in Context, Drafting, Design Complex Parts, Analyze and Annotate Parts, Sharing Information, Assembly Design, Contextual Design, Complex Assembly Design.

Surfacing: Introduction to Surface Design, Creating Wireframe Geometry, Shape Design Common Tools, Creating Surfaces, Performing Operations on the Geometry, Completing the Geometry in Part Design, Modifying the Geometry, Using Tools, Exercise and Workshops.

Sheetmetal: Getting started, Sheetmetal Walls, Bends and Unfolded Mode, Flanges, Sheet Metal Features, Transformations and Duplication, Mapping & Output, Advance Topics in Sheet Metal Design.

Case Study & Tool Test: Student has to complete any one live project case study and submit report of the same followed by Tool Test.

4. SIEMENS PLM Software Authorised Training Program in NX CAD

Duration = 80 Hrs.

Essentials for NX Designers, NX Synchronous Modeling Fundamentals, NX Sheet Metal, Drafting Essentials, Intermediate NX Design and Assemblies.

Case Study & Tool Test: Student has to complete any one live project case study and submit report of the same followed by Tool Test.

5. Finite Element Analysis using ANSYS Workbench

Introduction to ANSYS Workbench, Mechanical Basics, General Preprocessing, Meshing in Mechanical, Static Structural Analysis, Modal Analysis, Thermal Analysis, Results and Postprocessing.



Types of Analysis:

- Static Structural Analysis
- Modal Analysis
- Harmonic Analysis
- Transient Dynamic Analysis
- Non Linear and Contact Analysis

Case Study & Tool Test: Student has to complete any one live project case study and submit report of the same followed by Tool Test.

➤ **Soft Skills Training**

Résumé writing, Aptitude Test, Technical Test, Group Discussion Techniques, Interview techniques, Communication & Presentation Skills, Personality Development.

IFS Academy, Pune

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