IFS ACADEMY

Training For The Future!!

Industry Domain Oriented

PG Diploma in Engineering Design & Analysis

(Duration: 6 Months)

(With 100% Placement Assistance)

About the Course:

IFS Academy Certified Industry Domain Oriented Post Graduate Diploma courses in Engineering Design & Analysis are designed in consultation with Industry Experts to impart industry domain oriented Software training to fresh Mechanical Engineers so as to place them in industry. Course curriculum has been designed by taking inputs from 100+ Mechanical Design companies and their JD's. Our focus will be on Mechanical Design Fundamental concepts, 3D CAD & CAE Softwares and their industry domains by providing students with hands on case studies and live projects. The objective of the course is to make every student strong in fundamentals and train him on Design & Analysis Softwares along with domains like Plastic Design, BIW Fixture (Welding) Design, Surfacing & Sheetmetal Design, Seating System, Tool Design, SPM, Jigs & Fixtures.

Course Curriculum

1. Before we begin with Software & Industry Domains

***Engineering Design, Drawing Reading, GD&T &* Stack Up Analysis**

Duration: 20 Hrs

Industry experts will be delivering these sessions.

- Basic Design Calculations and Standard Component selections
- Material Science Fundamentals: Solid Mechanics and Strength of Materials
- Selection of components with basic parameters and calculations
- Design sample industry domain-oriented parts / assemblies like SPM, Jigs & Fixtures and Material Handling Equipment's with parameters provided by Customer.
- Awareness of Engineering Standards like **ASME / ISO** related to **Geometric Dimensioning & Tolerancing (GD&T) & Stack Up Analysis**
- Drawing checking using Checklist
- **GD&T Symbols and Manufacturing Drawings**
- Finite Element Analysis Introductory Theory

Note: Select any three Courses between Sr. No. 2 to 5. AutoCAD, ANSYS Mechanical APDL & Workbench is compulsory.

1. *AutoCAD for Mechanical Engineers*

Duration = 30 Hrs.

- Overview of AutoCAD Mechanical Software
- Generate 2D Drawings
- Working on Industry Domain Oriented Case Studies / Projects like:
  - Preparation of Isometric / Piping Drawings
  - Preparation of GA Drawings
  - Preparation of System Layout
  - Working with GD&T Symbols in the Drawings
  - Detailing & Drafting

2. *CATIA V5 Mechanical Design*

Duration = 60 Hrs.

- CATIA V5 overview in Mechanical Design
- 3D Modeling, Parts, Assemblies, Sheetmetal & Surfacing
- Drafting & Detailing
- Working on Industry Domain Oriented Case Studies / Projects like:
  - Creating Surfacing & Sheetmetal Parts
  - Automotive Plastics Interior and Exterior Trims
  - Introduction to Seating System Design
  - BIW Welding / Fixture Design
  - BOM Creation
  - Product Design & Development
  - GD&T

3. *Computer Aided Design using SolidWorks*

Duration = 60 Hrs.

Note: Students can select Autodesk Inventor / Solid Edge Software instead of SolidWorks if the job requirement is available on these tools.

- SolidWorks overview in Mechanical Design
- Understanding 2D Drawings and converting them into 3D Models

- Sketch- Drafting & Detailing
- Assembly Modeling
- 3D Modeling and Drafting of Engineering Parts, Sub-Assemblies and Assemblies
- Creating Parametric Drawings with GD&T and Engineering Calculations
- AutoCAD to SolidWorks Models
- Working on Industry Domain Oriented Case Studies / Projects like:
    - SPM / Jigs & Fixtures / Machines and Equipments
    - Sheetmetal / Packaging Industry / Equipment Design
    - Machine Design
    - Sheetmetal Design

4. NX CAD for Design Engineers

Duration = 60 Hrs.

- CATIA V5 overview in Mechanical Design
- 3D Modeling, Parts, Assemblies, Sheetmetal & Surfacing
- Drafting & Detailing
- Working on Industry Domain Oriented Case Studies / Projects like:
    - Create 2D & 3D Tooling Processes
    - Tooling Designing
    - BIW Welding / Fixture Design
    - Automotive Plastics Interior and Exterior Trims
    - BIW Welding / Fixture Design
    - BOM Creation
    - Product Design & Development
    - GD&T

5. Finite Element Modeling using Hypermesh

Duration = 60 Hrs.

- Review of Finite Element Theory
- Introduction to Hypermesh Overview
- Overall Meshing Process in Hypermesh
- Understanding Tetra & Hexa meshing
- Midsurface Extraction
- Understanding of Meshing quality criteria's

- FE Meshing of Complex Geometries using Shell & Solid Elements
- HM connections for ANSYS, Abaqus & LS Dyna
- Modeling of Automotive Plastic Trims and BIW Parts
- Automotive Exterior and Interior Trims
- Simulation Specific Model Building

6. ***Finite Element Analysis using ANSYS Mechanical APDL & ANSYS Workbench***

Duration = (80 Hrs.)

- Finite Element Analysis Theory
- Overview of ANSYS MAPDL & ANSYS Workbench
- Steps to perform Finite Element Analysis using ANSYS
- Pre processing using DM & Spaceclaim
- Plan the execution of Structural Analysis by understanding the requirements.
- Perform Structural Analysis on the identified component and Prepare a Report
- Results interpretation, suggest design recommendations based on Simulation results
- Perform Static, Vibration, Nonlinear (Contact, Material) and Dynamic Analysis using ANSYS Workbench
- Correlation of FEA & Test Data
- Perform Different Types of Analysis on Industrial Components / Assemblies like:
    - Automotive
    - Railway
    - Plastic
    - Fabricated
    - Jigs & Fixtures
    - Hydraulic
    - Axisymmetric

7. ***Soft Skills Training***

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

Deliverables:

- Technical sessions from industrial and academic professionals on topics of engineering design and materials; engineering drawing and GD&T.
- Seminars and guidance from industrial professionals on soft skills training.
- **Autodesk Authorised Training in AutoCAD for Mechanical Engineers:** *Autodesk Authorised Certificate of Completion.*

- **Dassault Systemes Authorised Certified Training Program in CATIA V5:** *Soft copy of Training Manual, Dassault Systemes Authorised Certificate of Participation & Login to EduSpace.*
- **NX CAD for Design Engineers:** *Access to Learning Advantage, SIEMENS PLM Software Authorised Certificate of Completion.*
- **Finite Element Modeling using Hypermesh:** *Soft copy of study material, IFS Academy Certificate of Completion.*
- **Finite Element Analysis using ANSYS Mechanical APDL:** *Soft copy of study material, IFS Academy Certificate of Completion.*
- **Finite Element Analysis using ANSYS Workbench:** *Soft copy of study material, IFS Academy Certificate of Completion.*

****

IFS Academy, Pune

T:+91-20-25430338, M: +91-98228 49628, +91-99224 40102, E: training@ifsacademy.org,

Visit Us At: www.ifsacademy.org