AUTODESK Learning Partner

IFS ACADEMY
Training For The Future!!

CAD/CAM/CAE using Autodesk Fusion 360

(Duration: 50 Hrs.)

Course Curriculum

Chapter 1: Interface & Navigation
Topics:

- Fusion 360 overview
- Workspaces (Design, Manufacture, Render, Simulation, etc.)
- View controls, navigation bar
- Browser & timeline

Objective: Build a strong foundation in navigating Fusion 360.
Learning Outcomes:

- Navigate between workspaces confidently
- Understand parametric timeline
- Use essential tools and shortcuts

Chapter 2: Sketching Basics
Topics:

- Sketch environment
- Basic tools (line, circle, rectangle)
- Constraints (geometric constraints)

Objective: Learn how to create controlled 2D sketches.
Learning Outcomes:

- Create fully constrained sketches
- Apply geometric constraints correctly
- Avoid under/over-constrained designs

Chapter 3: Advanced Sketching
Topics:

- Dimensions & parametric design
- Construction geometry
- Patterns & mirroring

Objective: Develop precision and parametric control.
Learning Outcomes:

- Build parametric sketches
- Modify designs using dimensions

Chapter 4: Basic 3D Modeling
Topics:

- Extrude, revolve
- Fillet, chamfer
- Shell

Objective: Convert 2D sketches into 3D models.
Learning Outcomes:

- Create solid models
- Apply basic modifications
- Understand feature-based modeling

Chapter 5: Intermediate Modeling
Topics:

- Sweep, loft
- Combine (cut, join, intersect)
- Pattern features

Objective: Create more complex geometries.
Learning Outcomes:

- Model complex shapes
- Use advanced tools effectively
- Optimize design workflow

Chapter 6: Surface & Form Modeling
Topics:

- Surface tools
- T-Spline (Form workspace)
- Sculpting basics

Objective: Introduce organic and freeform modeling.
Learning Outcomes:

- Create smooth organic shapes
- Understand surface vs solid modeling
- Edit forms efficiently

Chapter 7: Components & Assemblies
Topics:

- Components vs bodies
- Assembly structure
- Grounding components

Objective: Understand assembly design principles.
Learning Outcomes:

- Create structured assemblies

- Organize components effectively

Chapter 8: Joints & Motion
Topics:

- **Joint types (rigid, revolute, slider)**
- **Motion studies**
- **Contact sets**

Objective: Simulate real-world mechanical motion.
Learning Outcomes:

- **Apply correct joint types**
- **Simulate motion accurately**
- **Analyze movement behavior**

Chapter 9: 2D Drawing Creation
Topics:

- Creating drawings from design
- Views (orthographic, isometric)
- Dimensioning

Objective: Generate manufacturing drawings.
Learning Outcomes:

- Create clear technical drawings
- Apply proper dimensions
- Follow drafting standards

Chapter 10: CAM Basics
Topics:

- Manufacture workspace
- Setup creation (WCS, stock)

Objective: Prepare models for machining.
Learning Outcomes:

- Define proper setups
- Align models for machining

Chapter 11: Tooling & Feeds
Topics:

- Tool library
- Machining
- M code generation

Objective: Understand machining tools.
Learning Outcomes:

- Select appropriate tools

- Define cutting parameters
- Generate efficient toolpaths

Chapter 12: CAE Concepts
Topics:
- Static stress analysis
- Loads and constraints

Objective: Introduce engineering validation.
Learning Outcomes:
- Run basic simulations
- Interpret stress results

Chapter 13: Rendering
Topics:
- Appearance settings
- Lighting & environment
- Realistic rendering

Objective: Create photorealistic visuals.
Learning Outcomes:
- Apply materials
- Produce high-quality renders

Chapter 14: Animation Basics
Topics:
- Exploded views
- Motion animation
- Storyboards

Objective: Visualize product functionality.
Learning Outcomes:
- Create assembly animations
- Present designs effectively

Chapter 15: Advanced Workflow
Topics:
- Generative design strategies
- Design automation
- Script Configurations

Objective: Improve efficiency and scalability.
Learning Outcomes:
- Build adaptable designs
- Automate repetitive tasks

Chapter 16: Sheet metal Design
Topics:

- Design for Fabrication
- Sheet metal rules
- Flanging and Bending theories

Objective: Prepare for real-world applications.
Learning Outcomes:

- Apply industry best practices
- Optimize design for flat materials

Chapter 17: Final Capstone project
Objective: Combine all concepts into one project.
Learning Outcomes:

- Design, simulate, manufacture, and present a complete product
- Demonstrate end-to-end Fusion 360 workflow