HexnBit Skilling for Future

and

e3Dify You Imagine. We Create.

Present

2 Months Certificate Program

CAD Modelling

&

Rapid Prototyping

Modules included in the course along with different projects

Module - 1 Fundamentals of CAD	Module - 2 Environment Setup	Module - 3 "Know How" of the Environment	Module-4 Sketching
Module - 5 Tools and Operations	Module - 6 Planes	Module - 7 Sculpt Workspace	Module - 8 Surface Modelling
Module - 9 Assembly & Motion Study	Module - 10 Sheet Metal	Module - 11 Documentation	Module - 12 Rendering
Module - 13 Rapid Prototyping Basics	Module - 14 Additive Manufacturing Types	Module - 15 3D Printing	Module - 16 Slicing Techniques
Module - 17 Choosing 3D Printer	Module - 18 3D Printing Materials	Module - 19 Post Processing	Module - 20 Prototype to Product

Two Months Outline for CAD Modelling

Module-1
Fundamentals of CAD

1. What is CAD Modelling
2. History of CAD
3. Applications of CAD
4. Commonly Used CAD Softwares
5. CAD in Product Development
6. Fusion 360 Overview

Learning Outcomes:

Learn about the Basic Concepts of applications of CAD Designing. Know about CAD Softwares used in the industry.

Module-2
Environment Setup

1. Creating Autodesk Account
2. Prerequisites
3. Downloading & Installing
4. User Preferences

Learning Outcomes:

Learn about the Fusion 360 CAD software including the installation of the software, setting up of the workspace and the display properties.

Module-3
"Know How" of the Environment

1. Creating a Project
    a. Naming a Project
    b. Pinning a Project
2. Upload, Open and Close File
3. Toolbar
4. Toolbox
5. Changing the Units

Learning Outcomes:

Learn about the Fusion 360 environment including the different workspaces available, their tool and basics of handling a designing canvas.

Module-4
Sketching

1. Geometry Creation
2. Sketch Palette
3. Creating Sketches
4. Constraints
5. Adding Dimensions
6. Attached Canvas
7. Applied Sketching

Learning Outcomes:

Learn how to create a geometry along with the various tools that are available at our disposal to create a sketch.

Module-5
Tools & Operations

1. Extrude
2. Fillet
3. Patterns
4. Combine

Learning Outcomes:

Learn about the various tools that will be used to create as well as modify our geometry along with pattern creation.

Module-6
Planes

1. Planes
2. Axis
3. Vertices

Learning Outcomes:
Learn how to create plane, axis and vertices in a geometry.

Module-7
Sculpt Workspace

1. Create Box Primitive
2. Translate, Rotate, and Scaling
3. Crease Edge
4. Flatten

Learning Outcomes:
Learn about the sculpt workspace along with various operations present in it.

Module-8
Surface Modelling

1. Importing Reference Image
2. Creating Sketch, Form
3. Split Tool Usage
4. Offset Surfaces

Learning Outcomes:

Learn about the different tools for surface modelling along with their usage.

Module-9
Assembly & Motion Study

1. Joints
2. Joints Origin
3. Types of Joints
4. Joints Limits
5. Steering Joints
6. Motion Study

Learning Outcomes:

Learn about the various types of joints available and related motion study.

Module-10
Sheet Metal

1. Sketching for Sheet Metal
2. Flanges
3. Sheet Metal Rules
4. Flat Pattern Drawing

Learning Outcomes:
Learn about the sheet metal workspace along with the various tools present in it.

Module-11
Documentation

1. Create from Design
2. Add Views
3. Add Dimensions
4. Add Title
5. Publish to PDF

Learning Outcomes:
Learn how to create a technical document and drawing of your CAD model.

Module-12
Rendering

1. Material Selection
2. Appearances
3. Inserting Decals
4. Scene Setup
5. Texture Map Control
6. Explode
7. Local Rendering
8. Cloud Rendering
9. Turn Table Rendering
10. Video Outputs

Learning Outcomes:

Learn how to set up a rendering environment and create realistic images of your 3D model along with animation videos.

Module-13
Rapid Prototyping Basics

1. What is Rapid Prototyping
2. Applications of Rapid Prototyping
3. Importance of Rapid Prototyping
4. Different Rapid Prototyping Techniques
5. Selecting Suitable Rapid Prototyping Method

Learning Outcomes:

Learn about the various Rapid Prototyping techniques along with their advantages and disadvantages and their applications.

Module-14
Additive Manufacturing

6. Types of Manufacturing
7. What is Additive Manufacturing
8. Additive Manufacturing Techniques
9. Applications of Additive Manufacturing

Learning Outcomes:

Learn about the various types of Additive Manufacturing along with their applications.

Module-15
3D Printing

1. What is 3D Printing
2. Mechanism of 3D Printers
3. Applications of 3D Printing
4. Advantages & Disadvantages

Learning Outcomes:

Learn about the 3D Printing technology, its working and its usage.

Module-16
Slicing Techniques

1. What is Slicing
2. Different Slicing Software
3. Configuring a Slicer
4. Support Generation
5. How to Printers

Learning Outcomes:

Learn about the slicing software along with the setting required to get a perfect print.

Module-17
Choosing a 3D Printer

1. What is a 3D Printer
2. Types of 3D Printers available
3. Specifications of 3D Printer – Explained
4. Which 3D Printer to select for application
5. Things to keep in mind

Learning Outcomes:

Learn about the types of printers available and how to select them according to the application.

Module-18
3D Printing Materials

1. Material Types
2. Material Properties
3. Material Selection based on Application
4. Things to keep in mind

Learning Outcomes:

Learn about the types of materials, their properties along with their applications.

Module-19
Post Processing

1. What is Post Processing
2. Requirement of Post Processing
3. Types of Post Processing Techniques

Learning Outcomes:
Learn about the various processes involved in the post processing work to get a finished model.

Module-20
Prototype to Product

1. Phases of Product Development
2. Production Techniques
3. Preparing Production Timelines
4. Selecting right batch size for production

Learning Outcomes:
3D Designing, 3D Printing and Rapid Prototyping loop closed with the insights about the final stage of product development techniques.

Projects Undertaken:

Project 1:
Solid Modelling of a Household Table Lamp

Project 2:
Sheet Metal Design (Cutlery)

Project 3:
Enclosure Design for a PCB Unit