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المعهد الهندسي لخدمات التكنولوجيا والبرمجيات

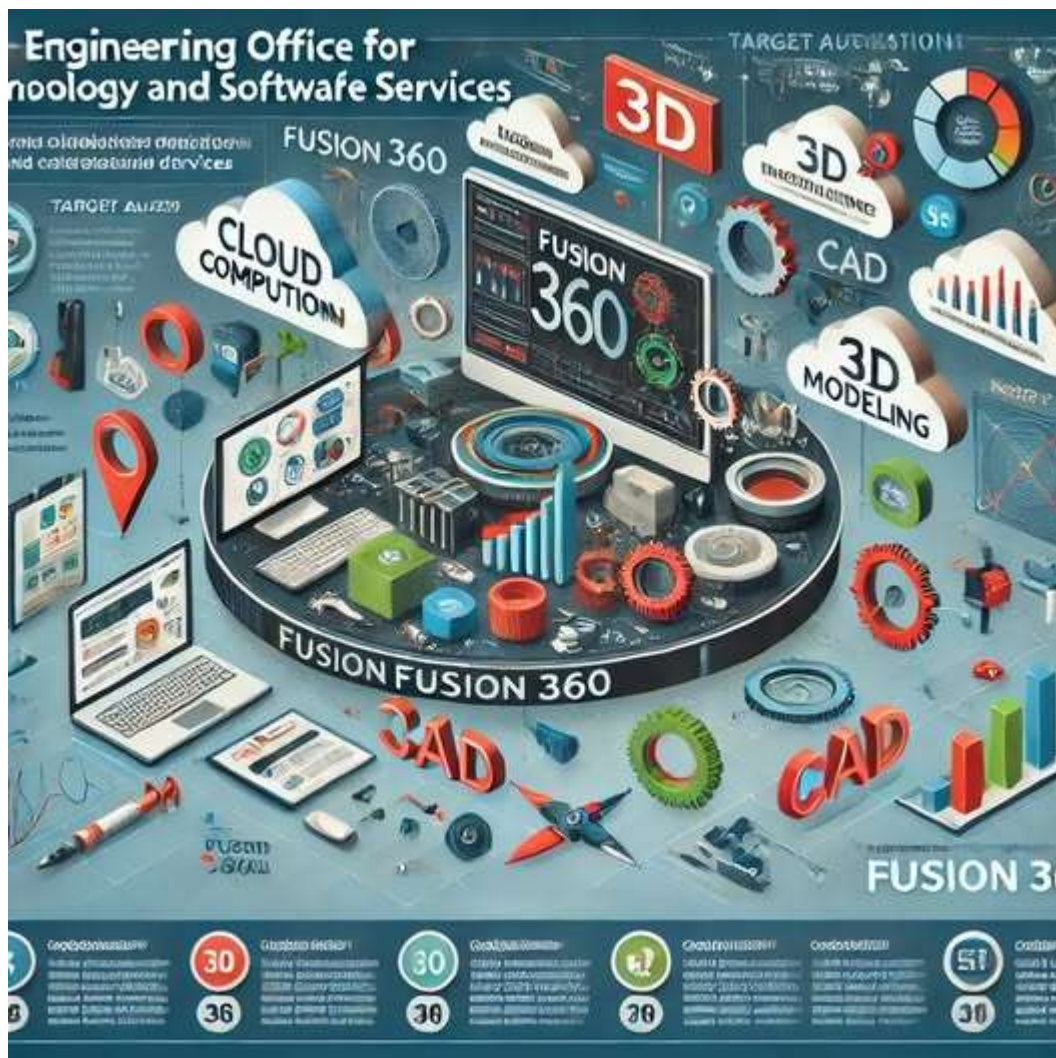


Engineering office for Technology and Software Services

Fusion 360 – Cloud 3D Modeling & Simulation

Fusion 360: Cloud-Based 3D Design and Mechanical Modeling

Course Code: 2052-MECH



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Engineering office for Technology and Software Services

Engineering Office for Technology and Software Services Academy

Course Overview

This course provides a solid foundation in **Fusion 360**, focusing on **cloud-based 3D design**, **parametric modeling**, and **mechanical simulation**. Participants will gain practical experience in creating assemblies, running stress analyses, and preparing technical drawings.

Target Audience

- Mechanical Engineers
- Product Designers
- Enthusiasts of 3D Modeling and CAD
- Engineering Students

Course Duration

- **4 Weeks** (12 sessions, 3 sessions/week)
- **2 hours per session**
- **Total: 24 Hours**

Course Objectives

- Master the use of **Fusion 360** for cloud-based design
- Build complex and parametric 3D models
- Perform mechanical simulations and stress analysis
- Collaborate, review, and present 3D designs efficiently

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Course Modules

Unit 1: Introduction to Fusion 360 (Week 1)

- Overview of the Fusion 360 interface
- Creating and managing an **Autodesk cloud account**
- Cloud storage and file management
- Importing/exporting various file types
- Setting up projects and synchronizing data

Unit 2: 3D Modeling Techniques (Week 2)

- Creating basic and advanced shapes
- Core modeling tools: **Extrude, Revolve, Sweep, Loft**
- **Parametric Modeling** techniques for design flexibility
- Working with assemblies: joints, motion links, constraints

Unit 3: Design and Mechanical Simulation (Week 3)

- Designing mechanical components and parts
- Performing **stress and deformation analysis**
- **Dynamic simulations** of motion and forces
- Creating technical drawings and manufacturing documentation

Unit 4: Collaboration & Cloud Sharing (Week 4)

- Real-time **collaborative design** via the cloud
- Sharing models and conducting design reviews
- Creating **3D presentation views** and exploded assemblies

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- Exporting designs for **3D printing** and manufacturing

Practical Projects

- Design a **consumer product** (e.g. furniture, device casing)
- Simulate the **mechanical movement** of a gear or linkage
- Prepare detailed technical drawings for manufacturing
- Export and prepare a part for **3D printing**

Required Tools & Software

- A computer with internet access
- Latest version of **Fusion 360**
- **Free Autodesk account** for cloud access

Certification & Learning Outcomes

Certificate of Completion will be awarded.

By the end of this course, learners will:

- Develop **professional 3D CAD models** using Fusion 360
- Simulate and analyze mechanical behaviors and constraints
- Collaborate on projects using Autodesk's cloud platform
- Prepare design documentation for fabrication and presentation

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