# DMF102
# Hands-on SolidWorks: Essentials of CAD


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RAAS
Institute of Emerging Technologies

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# Introduction

SolidWorks is a solution for any business or professional looking to integrate design and manufacturing processes with photorealistic visuals of projects and collaborative features with this 3D experience platform. If you want to take your product design to the next level, SolidWorks can help you succeed. This course covers the full range of features in SolidWorks, and will help you gain the skills to draw and model any simple or complex mechanical shape or assembly and ultimately design better products. Throughout the course, we will utilize a variety of real world examples to support your learning and inspire you for your own projects. By the end of the course, you will have the skills and confidence to start designing your own 3D models and assemblies.

Note: The course uses SolidWorks versions 2019 and 2020. However the course content independent of version used.

# This Course

There are many Solidworks courses available, but none quite like this one:

- We use real world examples during learning! This allows you to relate to your lessons more easily and so remember and understand them better
- Taught by a Solidworks professional! The instructor been using Solidworks since 2015 and even taken a range of official Solidworks certified training courses. The instructor worked as a Product Design Engineer and uses Solidworks every day to design all sorts of things for real clients. No academic only experience here
- No prior knowledge needed. This course is designed to take you from having never used any CAD program before to being able to model almost anything you can imagine
- Understand the wider context of CAD use. As well as explaining the basic CAD techniques this course also details how they relate to real world uses, such as 3D Printing


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# Who this course is for

- Anyone who would like to learn 3D CAD, whether for professional or personal use
- You may be a product designer wishing to expand your skills, a hobbyist looking to start 3D printing or an engineering enthusiast
- You may already know basic CAD and be looking to expand your skills, or you may be a complete beginner

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# Course requirements

- No prior knowledge of SolidWorks is required to take this course.

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# What you'll learn

- How to sketch 2D drawings and create a fully constrained picture
- Gain the understanding to create sketch-based features and apply a combination of modifying techniques (extrude, revolve, sweep, loft)
- Learn to modify 3D bodies using modifying tools (fillete, chamfer, shell, and rob)
- Create pattern and mirror features, bodies and geometries, and add geometric references (planes and axis)
- Construct fully-defined assemblies and non-fully defined assemblies (mechanisms)
- Perform detailed shop drawings for fabrication


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# Our Aims

- Quick learning in a smart way
- Understanding of the design process
- “Intelligence, Innovate, Inspire”
- Enhancement of 3D-modelling skills
- Designing products and prototype
- Thinking out of the box
- Better understanding of CAD/CAM


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# Who you'll meet

- Highly qualified engineering faculty with vast knowledge of 3D modelling and massive hands-on experience
- Expert in CAD/CAM, rapid prototyping and reverse engineering
- Highly skilled academia and industry leaders

# What you'll experience

- An in-depth series of offline/online lectures with high quality graphics and detailed descriptions.
- Hands-on SolidWorks based on real world examples
- Interactive sessions with academia and industrial experts

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# Course Instructor

**Hafiz Mansoor Ahmed**

**Mechatronics Engineer, SZABIST, Karachi**

He is the Instructor for the course "Hands-on SolidWorks with Emerging Technologies" in RAAS Institute of Emerging technologies at "The Hunar Foundation" Korangi Campus. His areas of expertise are Additive/Subtractive manufacturing, project based learning, research and development, 3D Scanning & reverse engineering, product designing, 3D modelling and rapid prototyping. Before joining "The Hunar Foundation", he was working as a Design Engineer in RapidTack . In RapidTack he designed & prototype multiple projects related to the current pandemic situation including smart pandemic helmet, air filtration system & currency sanitisation with critical & smart thinking which leads his way to design, innovate & inspire


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# Course Structure

## Module 01

Intro to SolidWorks and User Interface

- System Options
- Toolbars
- The 6 step methodology

## Module 02

Basic Sketching and Dimension

- Sketch Tools
- Dimensions
- Offset and Mirror

## Module 03

Sketch Based Features and Options

- Extrude Boss
- Extrude Cut
- Fillet and Chamfer

## Module 04

3D Modelling and Familiarity with Options

- Base/Swept
- Tab and Slot
- Jog and Lofted Bend

## Module 05

Intro to Surface Modelling

- Modelling Tools
- Thicken Cut
- Surface Geometry

## Module 06

More 3D Tools and Options

- Defining Materials
- BOM
- Calculation and measuring

## Module 07

Familiarity with Sheet Metal

- Edge Flange
- Hem/Lofted Bend
- Fold and Unfold

## Module 08

Assembly Designing Tools and Options

- Mate
- Explode
- Patterns

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# Join Us

- To be expert in SolidWorks
- To have better Understanding of CAD/CAM
- Explore the World of Design Engineering
- To Enhance your 3D-modelling skills
- Designing products and prototype
- Hands-on Experience
- Quick Learning

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