

SOLIDWORKS FOR MECHANICAL ENGINEERING

Engineered for skill enhancement.



PROGRAM HIGHLIGHTS

Accredited Certificates :

- ✓ Program approved ISO Certification

Internships :

- ✓ Industry-relevant opportunities provided-

Placement Assistance :

- ✓ Career guidance from industry experts-

Basic to Advanced Level Training :

- ✓ Learn from experienced AI professionals .

Live & Recorded Lectures :

- ✓ Flexible learning at your convenience .

Real-Time Projects :

- ✓ Hands-on minor & major projects



ABOUT US

- **OUR MISSION :**

Nxt Sync is a pioneering EdTech company committed to bridging the gap between theoretical learning and practical application. Our mission is to empower students with cutting-edge AI skills that enhance employability and prepare them for a tech-driven future.

- **OUR VISION--UPSKILL:** Empowering minds for the future.
- **INNOVATE:** Fostering creativity and breakthroughs .
- **EXCEL:** Preparing industry-ready professionals.



WHY SOLIDWORKS FOR MECHANICAL ENGINEERING?

- Industry-standard software for product design & development
- High demand for skilled CAD professionals
- Enhances engineering design and manufacturing skills
- Versatile career opportunities in various industries
- Facilitates 3D modeling, simulation, and analysis
- Boosts employability in core mechanical engineering fields



LEARNING PATH

- Introduction to CAD & SolidWorks
- Sketching & Part Modeling
- Assembly Design & Motion Analysis
- Surface Modeling & Sheet Metal Design
- Drafting, GD&T, and Manufacturing Drawings
- Mold & Tool Design
- Weldments & Structural Design
- Finite Element Analysis (FEA) & Simulation
- CAM Integration for CNC Machining
- Capstone Projects & Industry Case Studies



DETAILED MODULE BREAKDOWN

Module 1: Introduction to CAD & SolidWorks

- Overview of CAD and SolidWorks Interface
- Understanding 2D vs. 3D Modeling
- Setting up a Design Environment
- File Management & Saving Best Practices

Module 2: Sketching & Part Modeling

- Creating Sketches & Applying Constraints
- Extrude, Revolve, Loft, and Sweep Features
- Fillets, Chamfers, Shells, and Drafts
- Hole Wizard & Thread Features
- Configurations and Design Tables



Module 3: Assembly Design & Motion Analysis

- Bottom-up & Top-down Assembly Modeling
- Standard & Advanced Mates
- Interference & Collision Detection
- Exploded Views & Bill of Materials (BOM)
- Basic Motion Simulation & Kinematic Analysis

Module 4: Surface Modeling & Sheet Metal Design

- Creating Complex Shapes using Surface Tools
- Lofted, Boundary, and Freeform Surfaces
- Sheet Metal Features: Base Flange, Edge Flange, Hem, Jog
- Flattening & Exporting Sheet Metal Designs

Module 5: Drafting, GD&T, and Manufacturing Drawings

- Creating 2D Engineering Drawings
- Dimensioning, Tolerancing, and Annotations
- GD&T Principles (Geometric Dimensioning & Tolerancing)
- Isometric, Sectional, and Detail Views



Module 6: Mold & Tool Design

- Core & Cavity Extraction
- Parting Line & Draft Analysis
- Mold Base Creation & Cooling System Design
- Runner & Gating System

Module 7: Weldments & Structural Design

- Weldment Profiles & Structural Members
- Trimming, Extending, and Managing Cut Lists
- Creating Frames & Brackets
- Weldment Drawings & Reports

Module 8: Finite Element Analysis (FEA) & Simulation

- Introduction to Stress Analysis
- Static & Dynamic Analysis
- Thermal & Fatigue Analysis
- Optimization & Design Validation



Module 9: CAM Integration for CNC Machining

- Introduction to Computer-Aided Manufacturing (CAM)
- Generating Toolpaths in SolidWorks CAM
- Milling & Turning Operations
- G-Code Generation & Simulation

Module 10: Capstone Projects & Industry Case Studies

- Hands-on SolidWorks Projects
- Real-world Applications (Automotive, Aerospace, Consumer Goods)
- Industry Collaboration & Research-Based Projects



ASSIGNMENT'S & ASSESSMENTS

- Weekly hands-on assignments
- Mid-term Embedded mini-projects
- Final capstone Embedded project
- Live presentations & discussions

TOOLS & FRAMEWORKS USED

3D Modeling & Design:

SolidWorks, AutoCAD

FEA & Simulation:

SolidWorks Simulation, Ansys

Manufacturing & CAM:

SolidWorks CAM, Mastercam

Rendering & Visualization:

KeyShot, SolidWorks Visualize



RECOMMENDED READING

CAD & Design Principles:

- "Engineering Design with SolidWorks" - David Planchard
- "SolidWorks Bible" - Matt Lombard
- "Mastering SolidWorks" - Ibrahim Zeid



WHY CHOOSE NXTSYNC?

- ✓ Industry-Aligned CAD Curriculum
- ✓ Hands-on Real-World Projects
- ✓ Expert Mentorship & Career Guidance
- ✓ Flexible Learning Schedule
- ✓ ISO-Certified Training Program



Start Your CAD Journey with NxtSync Today!



THANK YOU

