SIEMENS NX

3D Modeling, Assembly Design & Inspection

TRAINING DURATION: 16 HOURS | DELIVERY: 2 DAYS | SOFTWARE: SIEMENS NX

Course Overview

This practical training program introduces participants to core Siemens NX capabilities for creating 3D mechanical models, developing part assemblies, checking component fitment and interference, reviewing existing models, and measuring complex components. The program combines guided demonstrations with hands-on exercises.

Course Table of Contents

Module 1: Introduction to Siemens NX and 3D Modeling (3 Hours)

Introduction to Siemens NX and its applications in mechanical design.

Overview of the Siemens NX interface, menus, toolbars, and navigation.

Understanding the Modeling environment and Part Navigator.

Creating 2D sketches using basic sketching tools.

Creating simple 3D models using Extrude, Revolve, Sweep, Hole, Edge Blend, and Chamfer.

Modifying and editing existing 3D models.

Module 2: Working with Parts and Assemblies (4 Hours)

Introduction to part modeling and assembly design in Siemens NX.

Creating and managing individual part files.

Understanding assembly structure and component relationships.

Creating a new assembly and adding components.

Working with assembly constraints, including Fixed, Touch Align, Align, Concentric, Distance, and Angle.

Positioning and orienting components within an assembly.

Managing and updating assembly components.

Module 3: Fitment, Alignment and Interference Checking (3 Hours)

Understanding component fitment and alignment.

Checking dimensional compatibility between assembled components.

Verifying component positioning and orientation.

Performing interference checks using NX assembly analysis tools.

Identifying overlapping and clashing components.

Analyzing clearance between components.

Resolving assembly fitment and interference issues.

Module 4: Navigating and Reviewing Existing 3D Models (2 Hours)

Opening and navigating existing Siemens NX part and assembly files.

Using Zoom, Pan, Rotate, and View Orientation tools.

Exploring the Part Navigator and Assembly Navigator.

Isolating, hiding, and showing individual components.

Using Section View for internal component inspection.

Reviewing and analyzing existing mechanical assemblies.

Module 5: Measurement and Inspection of Complex Components (4 Hours)

Introduction to measurement and inspection tools in Siemens NX.

Measuring linear, angular, radial, and diameter dimensions.

Measuring distances between faces, edges, and reference points.

Measuring complex geometries and curved surfaces.

Checking clearances and dimensional relationships between components.

Inspecting critical dimensions of mechanical components.

Reviewing measurement results for design verification.

Practical Hands-on Exercises

Exercise	Practical Activity
Exercise 1	Create a simple mechanical component using Sketch, Extrude, Hole, and Fillet.
Exercise 2	Develop multiple 3D parts and create a mechanical assembly.
Exercise 3	Apply assembly constraints to align and position components.
Exercise 4	Perform interference and clearance checks on an assembly.
Exercise 5	Open and review an existing Siemens NX assembly using Section View.
Exercise 6	Measure complex mechanical components and verify critical dimensions.

Learning Outcomes

Create basic 3D mechanical models using Siemens NX.

Develop individual parts and manage assemblies.

Apply assembly constraints and component positioning techniques.

Perform fitment, alignment, interference, and clearance checks.

Navigate and review existing NX models and assemblies.

Perform dimensional measurements and inspect complex components.

Training Methodology

Recommended delivery approach: approximately 30% instructor-led explanation and demonstrations and 70% guided hands-on practice. Exercises should be completed using Siemens NX with suitable sample mechanical parts and assemblies.