

2D CAD

- Introduction
- File management
- Orthographic drawings
- View management
- Display management
- Layer management
- Selection methods
- Parametric drawings
- Symbol creation using block
- BOM / Joinery details creation
- Isometric drawings
- Perspective drawings
- Annotations and Dimensions
- Team work
- Layout management
- Publish and Plot

Duration: 64 hrs

Courseware Issued

AutoCAD

- ▶ Reference Guide
- ▶ Project Workbook

MicroStation

- Introduction
- Understanding the interface
- MicroStation workflow
- Working with views
- Creating and modifying elements
- Annotation tools
- Dimensioning
- Working with levels
- Working with references
- Printing methods

Duration: 64 hrs

Courseware Issued

- ▶ MicroStation Reference Guide

AutoCAD 3D

- 3D modeling concepts in AutoCAD
- Understand and use viewpoint and UCS
- Wireframe modeling
- Solid modeling & editing
- Mesh modeling & editing
- Surface modeling & editing
- Create & manage 2D views from 3D models
- Materials, lights & rendering
- Working with images
- Import and export

Duration: 40 hrs

Courseware Issued

AutoCAD - 3D Modelling

- ▶ Reference Guide

Pro / ENGINEER

- Pro/ENGINEER concepts
- Using the Pro/ENGINEER interface
- Creating sketcher geometry
- Creating extrudes, revolves, and ribs
- Selecting and editing
- Creating datum features
- Utilizing internal sketches and embedded datums
- Creating sweeps and blends
- Creating holes and shells
- Creating rounds, chamfers and drafts
- Variable section sweeps, helical sweeps and swept blends
- Creating patterns
- Group, copy, and mirror tools
- Measuring and inspecting models
- Advanced reference management
- Relations and parameters
- Layers, family tables & UDF
- Assembling with constraints
- Exploding assemblies
- Creating surface features
- Editing surface features in Pro/ENGINEER
- Creating drawing views
- Creating drawing details
- Using advanced assembly constraints
- Creating and using component interfaces
- Creating and using flexible components
- Using assembly features and shrinkwrap
- Replacing components in an assembly
- Understanding simplified reps
- Creating cross-sections, display styles, and combined views
- Substituting components by rep, envelope, and model
- Creating and using assembly structure and skeletons
- Introduction to sheet metal design
- Primary walls, secondary and unattached walls
- Unbend, bend back and cuts
- Notches and punches
- Sheet metal forms
- Bending & Unbending sheet metal geometry
- Converting solid parts
- Sheet metal drawings with flat states and bend order table
- GD&T

Duration: 80 hrs

Courseware Issued

Pro/ENGINEER

- ▶ Reference Guide - 1
- ▶ Reference Guide - 2
- ▶ Advanced Reference Guide
- ▶ Project Workbook

Pro/ENGINEER Mold Design

- Basic about mold
- Type of molds
- Mold parts
- Creating the reference model
- Understanding shrinkage
- Creating a work piece automatically
- Creating and assembling a workpiece manually
- Mold volume creation
- Parting line and parting surface creation
- Splitting mold volumes
- Mold component extraction
- Mold features creation
- Filling and opening the mold

Duration: 24 hrs

Courseware Issued

Pro/ENGINEER Mold Design

- ▶ Reference Guide

Pro/ENGINEER Mechanism Design

- Introduction to mechanism design
- Understanding the mechanism design process
- Creating the model
- Verifying the mechanism
- Adding servo motors
- Preparing for analysis of a mechanism
- Analyzing the mechanism
- Evaluating analysis results
- Understanding advanced simplified representation functionality
- Managing complex drawings
- Project

Duration: 16 hrs

Courseware Issued

Pro/ENGINEER Mechanism Design

- ▶ Reference Guide

SolidWorks

- Sketcher basics
- 3D sketching
- Part modeling
- Creating reference geometries
- Editing features
- Advanced modeling tools
- Configuration
- Design table/library features
- Import/export of files
- Surface overview
- Bottom-up assembly
- Top-down assembly
- Exploding assemblies
- Simulation/ Detailing
- BOM, balloon tools
- Sheet metal
- PDM Works
- Weldment
- GD&T

Duration: 80 hrs

Courseware Issued

SolidWorks

- ▶ Reference Guide
- ▶ Project Workbook

NX CAD

- User interface
- Sketcher essentials
- Constraining sketches
- Datums
- Creating part features
- Editing parts
- Creating fundamental curves
- Editing curves
- Editing freeform features
- Basic assembly concepts
- Creating assemblies
- Positioning assembly components
- Assembly revisions and component replacements
- Assembly sequencing
- Assemblies - clearance and analysis
- Deformable components
- Part families
- Introduction to drafting
- Drawings and views
- Creating dimensions, notes and labels
- Plotting drawings
- GD&T

Duration: 80 hrs

Courseware Issued

NX CAD

- ▶ Reference Guide
- ▶ MCADD Workbook

NX CAM

- The operation navigator
- Manufacturing operations and postprocessing
- Wizards and shop documentation
- Planar milling - introduction and profiling
- Engrave text
- Face milling
- Cavity milling
- Z-level milling
- Thread milling
- Area milling
- Radial cutting
- Surface area cutting
- Engraving
- Contour profiling
- Common parameters
- Rough and finish turning
- Centerline drilling
- Groove and thread operations
- Multiple spindles and IPW

Duration: 40 hrs

Courseware Issued

NX CAM

- ▶ Reference Guide

NX Nastran

- Finite element analysis
- NX Nastran overview
- Geometry abstraction
- Geometry idealization
- Specifying materials
- Meshing the geometry
- Model checking process
- Defining boundary conditions
- Solving the FE model
- Post-processing the solution
- Generating reports
- Import and export of model data
- Applying contact and gluing conditions
- Linear static analysis
- Modal analysis
- Buckling analysis
- Response analysis
- Thermal analysis
- Nonlinear static analysis
- Assembly FEM
- Optimization study

Duration: 80 hrs

Courseware Issued

NX Nastran

- ▶ Reference Guide

ANSYS

- Introduction to engineering design
- Different types of numerical methods & applications
- Practical applications of FEA
- Basics of finite element method (FEM)
- Analytical method to solve any mechanics problem
- Theoretical FEM procedure to solve above mechanics problem
- Theories of failure
- Basic linear & torsional equation
- Getting started with ANSYS
- CAD modeling Using ANSYS
- Introduction to meshing

Duration: 80 hrs

Courseware Issued

ANSYS

- ▶ Reference Guide

HyperMesh

- HyperMesh
- Introduction to FEM
- Brief on Meshing
- Basic interaction with HyperMesh
- Understanding the GUI
- Importing and Repairing Geometry for Meshing
- Automatic Meshing
- Shell meshing
- Standard Tetra meshing
- Volume Tetrameshing
- TetraMesh Processor
- Creating hexa and penta mesh
- Quality Checks
- Penetration
- Assemblies: welding and swapping parts
- Analysis Setup
- HyperMesh Solver Interfaces

Duration: 40 hrs

Courseware Issued

HyperMesh

- ▶ Reference Guide

GD&T

- Dimensions and drawings
- Tolerance dimensioning
- Ways of expressing tolerance
- IT grades
- Introduction to "ASME Y14.5M-1994"
- GD&T rules
- Maximum Material Condition of a feature of size
- Least Material Condition of a feature of size
- Concept of virtual condition
- Concept of bonus tolerance
- Planar datums
- Modifiers and symbols
- Tolerance types

Duration: 16 hrs

Courseware Issued

GD&T

- ▶ Reference Guide

PPM Concepts

- Instructions to project planning and management
- What is a project?
- What is project management?
- Project management context
- Project Lifecycle
 - ▶ Initiation
 - ▶ Planning
 - ▶ Execution
 - ▶ Controlling
 - ▶ Closure
- Knowledge areas
 - ▶ Time management
 - ▶ Cost management
 - ▶ Scope management
 - ▶ Quality management
 - ▶ Risk management
 - ▶ Human resources management
 - ▶ Procurement management
 - ▶ Integration management
 - ▶ Communication management

Duration: 24 hrs

Courseware Issued

- ▶ PPM Concepts Reference Guide

MS Project

- Activity, calendars - definition, sequencing & estimation duration
- How to develop a schedule plan and control
- Network analysis - CPM, PERT, PDM
- How to prepare work breakdown structure (WBS)
- How to update WBS
- Constraints
- How to manage cost in a project
- How to do resource planning and cost estimation
- How to prepare resource sheet
- How to apply resource to each activity
- How to define resource pool and to allocate resources
- Filters and grouping
- How material resources are being allocated
- Analyzing resources by levelling the resource using crashing, stretching & splitting
- Earned value analysis
- Method of developing different types of reports according to industrial needs
- Scheduling in multiple projects
- Customisation
- Project

Duration: 40 hrs

Courseware Issued

MS Project

- ▶ Reference Guide
- ▶ Project Workbook

Primavera

- Calendars - defining hourly & daily calendar, weekly, monthly
- Activities - definition, sequencing & estimating duration
- Effectively using the four types of PDM relationship
- Scheduling the project
- Monitoring & project controlling
- Defining constraints & overcoming conflicts
- Defining & assigning activity codes
- Defining & assigning WBS codes
- How to organise the activities by using activity codes & WBS codes
- Reorganizing activities
- Filtering activities
- Defining project codes
- Preparing resource information
- How to apply resource to each activity
- Estimating the cost of the project
- How to analyse the resource by using resource profile & resource table.
- How to do resource levelling & resource smoothing using crashing, stretching & splitting
- Scheduling multiple projects & preparing a master project
- Updating the project progress & comparing the actual progress with the baseline
- Earned value management
- Preparing different types of reports
- How to prepare 'S' curve
- Highlighting the progress in the bar chart
- Application of global change
- Project

Duration: 40 hrs

Courseware Issued

Primavera

- ▶ Reference Guide
- ▶ Primavera workbook