

**Name of Course :      AUTOCAD 2D & 3D DRAFTING**

**COURSE CONTENTS**

**THEORY**

- Introduction to basic Engg. Drawing
- Overview on Absolute Co-ordinate system
- Relative Co-ordinate System
- Polar Co-ordinate System
- Line, Break, Erase, Undo commands
- Trim, Offset, Fillet, Chamfer commands
- Arc, Circle commands
- Move, Copy, Array commands
- Insert Block, Make Block -
- Scale, Rotate, Hatch Commands
- Templates, Inserting drawings, Layers
- Creating multi layers
- Dimensioning drawings
- Creating styles in dimensioning
- 3D, 3D primitives
- Extrude, Revolve command
- Sweep, loft, draft editing of 3D drawings
- Subtract, union, intersect commands
- Setting User co-ordinate Systems
- Rotating, Plotting, Print preview

**PRACTICALS**

- Exercise on basic reading of drawing
- Demo on Auto CAD, Drawing layouts, Tool bars, File creation, Save, Open existing drawings, creation of Drawing Sheet as per ISO.
- Exercises using Absolute Co-ordinate system - Exercises using Relative Co-ordinate System, Polar Co-ordinate System.
- Practice using Trim, Offset, Fillet, Chamfer Commands
- Practice using Arc, Circle commands
- Practice using Move, Copy, Array, Insert Block, Make Block, Scale, Rotate, Hatch Commands
- Practice using Creating templates, Inserting drawings, Layers
- Practice using Dimensioning drawings, Creating styles in dimensioning.
- Drawing practice using 3D primitives, Extrude,
- Revolve command
- 3D drawing by using User co-ordinate systems.
- Plotting, Print preview

## **Name of Course : SOLIDWORKS 2011**

### **COURSE CONTENTS**

#### **THEORY**

- Introduction to Solid Works 2008
- Sketching features - Applied features
- Constraints -2D blocks in 3D sketches
- Auto trace tools
- Revolved features using axes
- Circular patterning changes and Rebuild problems.
- Creation of ribs, mirror pattern, Hole wizard.
- Creation of part configurations,
- Part design tables - Inset Design Table
- Drawings & Detailing
- Creation of drawing sheets - Add drawing items
- Named views, std. 3 views, auxiliary views, section views, detail views.
- Driving dimensions & Bill of materials
- Driven (Reference) Dimensions, Annotations, Alternate position view

#### **PRACTICALS**

- Practice on User interface - Menu Bar -command manager – Feature manager – Design Tree – settings on the Default options – suggested settings – key board short cuts.
- Practice on Creation of the best profile – create a new part – Extrude bosses and cuts, add fillets, changing dimensions - Using Copy & Paste - Editing a feature definition.
- Practice on Components configuration in an assembly, Insert subassemblies, Interference detection -
- Practice on Bottom up assembly modeling
- Practice on Creation of a new assembly, Insert components into an assembly, Add mates (degree of freedom
- Practice on Exploded views – Configuration manager, Animation controller - Difference between sweep and loft,
- Exercise on using library features.

## **Name of Course : INVENTOR 2011**

### **COURSE CONTENTS**

#### **THEORY**

- Basics of Inventor 2008
- Making work Directory & Tool bar Settings
- Creating basic sketched features
- Intermediate sketches
- Editing parametric parts.
- Making assemblies
- Patterning & Mirroring features
- Insert Bolted connection
- Automated Dimensioning Techniques
- Introduction to plot & Different ways of plotting
- Manual Dimensioning Techniques
- Revision Tables and Tags
- Introduction to Design Accelerators
- Bolted Connections

#### **PRACTICALS**

- Demo on Autodesk Inventor User Interface, view manipulation, designing parametric parts.
- Practice on creating 2D sketches, Geometric Constraints, Dimensional sketches
- Practice on Creation of Chamfers and fillets, Creating holes & threads - Patterning & mirroring features, creating thin walled parts
- Practice on Basic part design in an assembly.
- Practice on Designing assemblies, using project files in assembly design placing components in an assembly constraining components.
- Practice on Identifying parts in an assembly, Analysis and motion Tools, Presenting your assembly Setting
- Exercise on Drawing Standards - Drawing Resources - Annotating Holes and Threads - Creating Centerlines, symbols and leaders, Simulation using Autodesk Inventor - Annotating Holes and Threads.
- Practice on Creation of Centerlines, symbols and leaders, Simulation using Autodesk Inventor.

## **Name of Course : MASTERCAM X5**

### **COURSE CONTENTS**

#### **THEORY**

- Basics of MASTERCAM X2
- File menu commands
- Tool bar selection
- Process overview
- Shortcut keys customize
- Additional 2D Geometry creation
- Geometry modification
- 3D wire frame creation
- Drawing / Screen manipulation.
- Programming utilities
- Machining of solids
- Knowledge based machining operation.
- Machine control definition
- Select material library for speed and feeds
- Chucking Applications
- Apply Bar Feed Application.
- Shaft & Tailstock Applications.
- Saving tool path operations
- Post Processing of CNC Code.

#### **PRACTICALS**

- Practice on MasterCam Environment – Windows Basics - Create 2D Drawings – 2D Geometry creation Basics.
- Practice on Geometry analyze and verification, Geometry Transformation - 2D contour Tool paths – MasterCam job process summary.
- Practice on Navigating MasterCam – Screen Layout
- Pocket Tool Paths, Facing Tool Paths, Tool Path verification, Tool Path Editing.
- Practice on Creation of 2D Geometry for Lath application, understand basic job set select stock - How to apply roughing, finishing, grooving, threading and cut-off Tool paths.
- Practice on Stock Advance, Stock flipping - Stock Transfer from one spindle to another.