SKILLS
that can get your
engineering career
growing
AutoCAD for Mechanical Engineers

Duration
80 Hours

Courseware Issued
AutoCAD for Mechanical Engineers
Reference Guide

- Introduction to engineering drawings and AutoCAD
- Drafting basic geometry shapes in AutoCAD
- Modifying drawings in AutoCAD
- Layer management
- Hatching and gradient technics
- Isometric drawings
- Dimensioning and Tolerancing
- Parametric drawing
- Blocks and attributes
- External reference (Xref) concepts
- Object linking and embedding (ole) concepts
- Plot and publish
- 3D modeling
- Advanced drafting using AutoCAD Mechanical
- Mechanical features drawing
- Drafting assemblies
- Tutorials and projects
AutoCAD 2D for Mechanical Engineers

Duration
40 Hours

Courseware Issued
AutoCAD 2D for Mechanical Engineers Reference Guide

- Introduction to engineering drawings and AutoCAD
- Drafting basic geometry shapes in AutoCAD
- Modifying drawings in AutoCAD
- Layer management
- Hatching and gradient technics
- Dimensioning and Tolerancing
- Parametric drawing
- Blocks and attributes
- Xref, OLE concepts
- Plot and publish
- Tutorials and projects
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
Creo / Parametric

- Creo/Parametric concepts
- Creating sketcher geometry
- Creating extrudes, revolves, and ribs
- Selecting and editing
- Creating datum features
- Creating sweeps and blends
- Creating holes and shells
- Creating rounds, chamfers and drafts
- Variable section sweeps, helical sweeps and swept blends
- Layers, family tables & UDF
- Assembling with constraints
- Exploding assemblies
- Creating surface features
- 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
- Creating skeletons
- Sheet metal design

Courseware Issued
Creo/Parametric Reference Guide with Workbook

Duration
80 Hours
Creo Simulate

Duration
40 Hours

Courseware Issued
CREO Simulate Reference Guide

- Theoretical Fundamentals
- Preparing a CAD Model
- Pre-processing
- Meshing
- Structural Static Analysis
- Model Analysis
- Buckling Analysis
- Symmetry
- Thermal
- Assembly Analysis
- Dynamic analysis
- Optimization Study
CATIA

- CATIA user interface
- Creating and editing sketches
- Creating sketch based features
- Creating transformation features
- Creating dress up features
- Creating advanced replication tools
- Assembly design
- Editing parts in assembly
- Creating surface features
- Generative sheet metal design
- Drawing view generation
- Bill of materials, balloons
- Finalizing the drawing and printing
- Dress up on 2D Views
- Real time rendering
CATIA Kinematics

Duration
24 Hours

Courseware Issued
CATIA Kinematics Reference Guide

- Kinematics Overview
- Graphic User Interface of CATIA Kinematics
- Basic mechanism process
- Creating Joints
- Motion Transfer Joints
- Rotating Joints
- Complex Joints
- Converting Constraints into Joints
- Generating Mechanisms
- Simulating Mechanisms
- Evaluating Mechanisms
- Swept Volume
Reverse Engineering using CATIA

Duration
40 Hours

Courseware Issued
Reverse Engineering Reference Guide

- Reverse Engineering (Using CATIA)
- Process in Reverse Engineering
- Reverse Engineering Hardware and Software
- Getting Started
- Processing the point cloud data
- Importing cloud data
- Creating and editing scans
- Curve creation
- Creating surfaces from curves (QSR)
- Completing the surfaces with GSD
SolidWorks

**Duration**
80 Hours

**Courseware Issued**
SolidWorks Reference Guide

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

- Types of Motion Studies
- Particle dynamics
- SolidWorks Motion Capabilities
- SolidWorks Motion Entities
- Animation and Basic Motion
- Motion Simulation
- Using SolidWorks Motion for solving Particle Dynamics problems
- Using SolidWorks Motion for Solving Multi body Dynamics with examples
- Results Plots and Verification
Autodesk Inventor

- Autodesk Inventor User Interface
- 2D sketching
- 3D sketching
- Parametric Part Modeling
- Editing Features
- Advanced Modeling Tools
- Creating I- Part, I- Features, I-Logic
- Assembly Design
- Bottom –Up Assembly
- Top- Down Assembly
- Creating Adaptive, Flexible components
- Creating Presentation File
- Understanding Simplified Assemblies
- Using Shrinkwrap
- Creating Skeleton Modeling
- Sheet metal Design
- Surface Modeling
- Drafting & Detailing
- Freeform Modeling
- Inventor Studio
NX CAD

Duration
80 Hours

Courseware Issued
NX CAD Reference Guide

- 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
• The operation navigator
• Manufacturing operations and post processing
• 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
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
Ansys Workbench

Duration
80 Hours

Courseware Issued
ANSYS Workbench Reference Guide

- Introduction to CAE
- General Procedure involved in FEA
- GUI of ANSYS Workbench
- Working on a Project
- CAD modeling using ANSYS Workbench
- Defining and Assigning Materials
- Generating the mesh
- Optimizing the model to refine mesh

- Working with different boundary conditions
- Surface and Line Models
- Static Structural analysis
- Model analysis
- Buckling analysis
- Thermal analysis
- Coupled Field (Thermal Stress)
- Post Processing
Ansys Fluent

Duration
40 Hours

Courseware Issued
ANSYS Fluent Reference Guide

- Basics of CFD
- CFD simulation setup
- CFD meshing
- Flow mixing
- Heat Transfer
- Transonic Flow - Airfoil
- Multiple Species
- Turbulence Modeling
- Radiation and convection models
- Plane frame design
- Geo technical module
- Siphoning
HyperMesh

Duration
40 Hours

Courseware Issued
HyperMesh Reference Guide

- Introduction to FEM
- Brief on Meshing
- Basic interaction with HyperMesh
- Preparing geometry for meshing
- Shell meshing
- Tetra meshing
- Mesh quality check
- Shrinkwrap mesh
- Assemblies: welding and swapping parts
- Analysis Setup
- HyperMesh Solver Interfaces
- Post process setup
- Review, Test and Project Discussion
3D Printing

Duration
24 Hours

Courseware Issued
3D Printing Reference Guide

- Introduction of 3D Printing
- Evolution of 3D Printing
- About Additive Manufacturing
- CAD File formats for 3D print
- Stereo lithography files
- Various Printing technologies (SLA, SLS, FDM, Poly jet printing, Color jet Printing, SHS, SLM,LOM, Multi jet Printing,DLP)
- FDM in detail
- Preparation of print ready file using Plasto 200
- Operating Plasto 200 – Live Demonstration
- STL principles
- Object Placement
- Print Settings
- Material Properties
- Manual Controls
- Supports
- Project
Radiographic testing
- Basic principle, Radiographic testing technique.
- Radiation safety

Magnetic particle testing
- Basic principles
- Codes, standards, specifications and procedures (mt)
- Presentation and recording of results (mt)

Ultrasonic testing
- Basic principles
- Characteristics of wave propagation
- Measurement and calibration techniques

Liquid penetrant testing
- General description
- Steps of liquid penetrant testing
- Flaws under tensile or no loading than flaws under compression loading

Visual testing
- Visually inspecting a weld
- Examination requirements
- Weld discontinuities
Piping and Welding (QA/QC)

Duration
24 Hours

Courseware Issued
Piping and Welding Reference Guide

Piping & Standards
- Types of pipes based on manufacturing process
- Valve selection & Standards
- Piping drawings
- Process and instrumentation drawing
- Pipe support
- Loads on piping system

Welding
- Classification
- Welding with or without filler material
- Source of energy for welding
- Types of joints
- Weld symbols, Weld defects

ASME ix brief introduction
- Introduction
- WPS, PQR, SWPS, WPQR
- Acceptance standards
- PQR/ WPQR testing
- Weld inspection and testing
HVAC Design

- Introduction to Heating ventilation and Air conditioning, Psychrometric Chart
- Refrigeration Cycle, Types of AC system
- Cooling and Heating load calculation
- General heat load calculation, Duct Designing
- Air Terminals, Toilet Ventilation
- Kitchen hood ventilation, Car parking ventilation
- Tunnel Ventilation, Stairwell Pressurization
- Chillers/DX system
- Cooling towers, Coil selection, VRF system, District cooling
- Air Curtains, ESP, Heating system
- Drafting using AutoCAD
- Kitchen Hood, Toilet ducting, AHU, examples on car parking plans, Duct sizing in AutoCAD.
AutoCAD for Architects and Civil Engineers

- Drafting basic geometry
- Layer management
- Hatching and gradient technics
- Isometric drawings
- Dimensioning
- Parametric drawing
- Blocks and attributes
- Modifying drawings in AutoCAD
- External reference (Xref) concepts
- Object linking and embedding (OLE) concepts
- Layout management
- Plot and publish
- 3D modeling concepts in AutoCAD
- Introduction to AutoCAD Architecture
- Advanced drafting using AutoCAD Architecture
- AEC objects
- Tutorials and projects
AutoCAD 2D for Architects and Civil Engineers

Duration
40 Hours

Courseware Issued
AutoCAD 2D for Architects and Civil Engineers Reference Guide

- Introduction to engineering drawings and AutoCAD
- Drafting basic geometry shapes in AutoCAD
- Modifying drawings in AutoCAD
- Layer management
- Hatching and gradient techniques
- Dimensioning and Tolerancing
- Parametric drawing
- Blocks and attributes
- Xref, OLE concepts
- Plot and publish
- Tutorials and projects
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 Hours

Courseware Issued
MicroStation Reference Guide
ARES Commander

- User Interface
- Drafting Options
- File Management
- Draw Entities
- Modify Entities
- Annotation & Dimensions
- Reference Manager
- Sheet, model work space
- Model workspace
- Page Layout manager
- Attach Image, PDF
- Attach Drawing
- Export, Pack and Go
SketchUp

Duration
40 Hours

Courseware Issued
SketchUp Reference Guide

- Templates
- Inference: Concept, Inference Locking
- Pushing and Pulling Shapes into 3D
- Building models as a Block
- Building models using Components
- Building models from DWG
- Building models using Match Photo
- Modeling with accuracy tools
- Modeling with static & dynamic components
- Component attributes
- Presenting your model
- Camera, section, scenes, styles, layers, materials
- SketchUp layout
Revit Architecture

- Introduction to BIM & Revit Architecture
- Place and modify Walls & Complex Walls
- Add and modify Wall Profiles
- Place Doors, Windows & Components
- Dimensions and Constraints
- Create Floors and Ceilings
- Curtain Walls & Stairs
- Conceptual Models
- Annotation & Schedules
- Sheets and Title Blocks
- Views, Camera, Walk-through, Render & Solar Study
- In-Place Families
- Family Creation
- Site Design
- Link Projects & Collaboration
- Design Phase
- Realistic Presentations
- Import & Export
Bentley AECOsim Building Designer

Duration
80 Hours

Courseware Issued
AECOsim Building Designer Reference Guide

- AECOsim User Interface
- Different Modules in AECOsim Building Designer
- Working with AECOsim Architectural Building Designer
- Federated Models of the Project
- Creating UCF and PCF
- Configuring grids and floors
- Drafting and Modifying Tools
- Creating an Architecture Model
- Creating dynamic views of the model
- Part & Families
- Drawing templates
- Working with content libraries
- Importing and exporting models
- Rendering
Max for Engineers / Architects

**Duration**
80 Hours

**Courseware Issued**
Max for Engineers / Architects Reference Guide

- Introduction to 3ds Max
- Modeling using basic primitives
- Transforming objects
- Customizing working units
- Arranging objects using utility tools
- Modeling using parametric modifiers
- Editing Poly Models – using Caddy Interface
- Spline modeling
- Landscaping and modeling using Compound Objects
- Construct using Architectural objects
- Views – Lights and Cameras
- Textures – Basic & Advance
- Particle Systems & Forces
- Importing other formats
- Basics of Animation
- Walk-through
- Advanced Rendering
Design Visualization.Pro

Duration
40 Hours

Courseware Issued
Design Visualization.Pro
Reference Guide

- Introduction to 3ds Max Design
- Understanding about primitives and selection methods
- Modeling using parametric modifiers and shapes
- Interoperability with AutoCAD and Revit Architecture models
- Handling Slate Material Editor using libraries
- Understanding about the lighting concepts
- Working with Particle Systems and Environmental Effects
- Handling daylight effects
- Working with latest Rendering Engines
- Understanding the Animation Concepts
- Working in Track views for animating the Revit models
- Video post for Animations
5D BIM using Navisworks

Duration
24 Hours

Courseware Issued
Navisworks Reference Guide

- Introduction About Autodesk Navisworks Manage
- Review the Model
- Object Attributes
- Create and use set of Objects
- Manipulate Object Attributes
- Transform Objects
- Measure tools
- Links
- Navigate the scene
- Clash Detection
- Timeliner
- Timeliner Costs
- Animator
- Use Animator for Soft Clashing
- Scripter
- Quantification Tool
- Perform Model Takeoff
- Update and Analyze data
- Adding Materials to a Model
- Material Mapping
- Lighting
- Sun and Sky Lights
- Photorealistic Rendering
Building Estimation and Costing

- Introduction
- Customizing Currencies & Catalog Creation
- Work Breakdown Structure
- Manual Takeoff Tools: Area, Backout, Linear, Count
- Automatic Takeoff Tools: Model, Search, Single Click
- Assembly & Validate Takeoff Data
- Compare & Display
- Report Generation & Export
STAAD.Pro

- Model Generation and Editing
- Assigning loads
- Automatic load generations:
  - Slab, Wind and Moving loads
- Concrete Design
  - Column and Beam design
- Seismology
  - Seismic Analysis and Design
  - Dynamic Analysis
    - Response Spectrum
    - Time History Analysis
- FEM / FEA
  - Water Tank Design
  - Slab Design
  - Staircase Design
  - Shear wall Design
  - Bridge Deck design
- Steel Design
  - Steel Frame Structure Design
  - Overhead Transmission
  - Line Towers Design
  - Steel Structure design with Pushover Analysis
- Foundation Designs
  - Isolate, Combined, Strip, Mat and Pile Cap
- Report Generation and Plotting
ETABS

Duration
80 Hours

Courseware Issued
ETABS Reference Guide

- Introduction
- Plane Frame Modelling
- Space Frame Modelling
- Load Pattern and Definition
- Analysis and Analysis Reports
- Concrete Frame Design and Detailing
- Shear wall design
- Steel frame design
- Steel connection design
- Steel joist design
- Flat slab design
- Waffle slab design
- Seismic analysis
- Detailing
- Steel Design and Detailing
- Composite Beam Design
- Introduction to Dynamic Analysis
Ansys Civil

Duration
40 Hours

Courseware Issued
Ansys Civil Reference Guide

- Introduction Structural Engineering
- FEM
- Civil FEM Setup
- Modelling in ANSYS
- Loads
- Solve
- Civil Post processing
- LS Files
- Load Combination
- Concrete Design
- Modelling
- Slab Design
- Pre-stressed Concrete Design
- Bridge Design
- Geotechnical Module
- Seismic Design
- Steel Design
Creating and working with Workframes
Working with Display and Area Classes
Inserting Steel Shapes
Shapes Manipulation
Working with Plates
Creating Connections
  - End Plate
  - Base Plate
  - Bracing
  - Purlin
  - Web Angle
  - Shear Plate
Working with Structural Elements
  - Handrail
  - Stair
  - Ladder
User created shapes
Part Family
Detailing
  - Symbol creation
  - Grouping
  - Material Takeoff
  - Dimension
RCC Detailing

Duration
40 Hours

Courseware Issued
RCC Detailing Reference Guide

- Introduction
  - RCC Detailing
  - AutoCAD Structural Detailing
- Effective usage of Country Specific Templates and Standards
- Element Creation
  - Automatic
  - Manual
- Slab Creation with Surfacedistribution
- RCC Detailing of
  - Foundation
  - Column
  - Beam
  - Slab
  - Staircase
  - Retaining Wall
- Drawing Preparation
- Bar Bending Schedule
- Export
- Print
AutoCAD Civil 3D

Duration
80 Hours

Courseware Issued
AutoCAD Civil 3D Reference Guide

- Computer Aided Land Survey
  - Working with point data
  - Surface creation
  - Surface analysis
  - Parcels
- Transportation Design
  - Design Criteria
  - Alignment Creation
  - Corridor Creation
  - Intersection Design
- Roundabout Design
- Custom Assembly Creation
- Report Generation
  - Earthwork Calculation
  - Quantity Takeoff
- Pipe Layout
  - Design Rules
  - BOM
- Plotting
MX ROAD

Duration
64 Hours

Courseware Issued
MXROAD Reference Guide

- View controls
- Survey inputs and validation
- String names and Drawing styles
- Point Selection Methods
- Surface checker
- String creation and editing
- Surface analysis
- Earthwork calculation
- Alignment creation
  - Horizontal
  - Vertical
  - Best fit
- Carriageway design
- Junction design
- Shoulder design
- Pavement design
- Dynamic reports
- Road redesign
- Overlay design
- Section views
- Final drawings
Computer Aided Land Survey Using AutoCAD Civil 3D

Duration
24 Hours

Courseware Issued
Computer Aided Land Survey using AutoCAD Civil 3D Reference Guide

- Introduction to Land Survey and AutoCAD Civil 3D
- Surface creation based on the survey data from
  - Theodolite
  - Total Station
  - LiDAR
  - Google Earth
  - DEM files
- Surface Styles
- Surface Analysis
- Earthwork Calculation
  - Cut and Fill Volume
  - Grading
  - Profile View Generation
- Site Layout
AutoCAD for Electrical and Electronics Engineers

Duration
80 Hours

Courseware Issued
AutoCAD for for Electrical and Electronics Engineers Reference Guide

- Introduction to engineering drawings
- Drafting basic geometry shapes in AutoCAD
- Layer management
- Hatching and gradient technics
- Isometric drawings
- Dimensioning
- Blocks and attributes
- External reference (Xref) concepts
- Object linking and embedding (OLE) concepts
- Layout management
- Plot and publish
- Introduction to AutoCAD Electrical
- Symbol builder and circuit builder
- Schematic components
- Wires and wire numbers
- Programmable Logic controller
- Connectors
- Panel layout
- Reports and conversion tools
- Tutorials and projects
REVIT MEP

 Duration
80 Hours

 Courseware Issued
Revit MEP Reference Guide

- Introduction
  - MEP Design
  - Revit MEP
- Work sharing
- Family Creation
  - Solid Modeling
  - Equipment
  - Light Fixture
  - Devices
- HVAC Design
  - Heating and Cooling Load Analysis
  - Logical Systems
  - Mechanical System and Duct Work
  - Mechanical Piping System
  - Inspect System
  - Electrical Design
  - Lighting Analysis
  - Power and Communication Design
- Plumbing Design
- Fire Protection System
- Schedules
- Documentation
- Sheet Setting
- Printing
Microsoft Project TMAI102

Duration
64 Hours

Courseware Issued
Microsoft Project Reference Guide with Workbook
(Mechanical/Civil/Electrical)

- PPM Concepts
- Calendar
- Task / Relationships
- Work Breakdown Structure
- Constraints and Recurring Task
- Define and Assign Resource
- Resource Analysis and Leveling
- Baseline
- Update Project Progress
- Tracking
- Earned Value Analysis
- Customization and Formatting
- Generate Reports
Your advantage

Flexible batch timings
Instructors certified by Internal Training Academy (ITA)
Tie up with International organizations
Equips with industry specific CAD skills
World class up-to-date curriculum
Globally valid Certification

Choose a level and course that best suits your needs.
And get job-ready!

Note: The training for select courses will be conducted only at the client's site (Educational Institution / Corporate). The client must ensure the lab is equipped with the required software and hardware specifications for CADD Centre to conduct the associated course training. For further details please visit your nearest centre.

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