

**Certificate in**  
**Computer Aided Designing (AutoCAD 2000)**  
**under SCVT Craftsman Training Scheme**

**Certificate in  
Computer Aided Designing (AutoCAD 2000)  
under SCVT Craftsman Training Scheme**

Eligibility : 12th Science pass under 10+2 system or duly recognized Diploma in Engineering from any AICTE approved Polytechnic Diploma of 3yrs duration after class 10th.**OR** I. T. I. Holder in DM/DC Trade.

Fees : 12,000/-

Age : As per Department's normal ITI Admission norms

Duration of Training : 26 Weeks (1 year) @ 30 hrs/week.  
- 2 hrs/week for Library  
- 2 hrs/week for Week End Exam  
- 2 hrs/week for Extra Curricular Activity

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Total : 6 hrs/week  
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**30 - 6 = 24 hrs/week total course hours.**

Total Practical hrs/week : 12 hrs

Total Theory hrs/week : 12 hrs

Total No. of hours for course : 26 x 24 hrs = 624 hrs

Total no. of hours for Practical : 26 x 12 hrs = 312 hrs

Total no. of hours for Theory : 26 x 12 hrs = 312 hrs

Total Students per Batch : 20

Objectives of the Course :

- 1) Learning Fundamental of Designing.
- 2) To attain optimum skill level as Draftsman in any of Architectural Firm.
- 3) Can work in any Civil / Mechanical / Plastic / Automobile or Electrical Industries as a product designer.
- 4) Learning various packages of AutoDesk like AutoCAD 2000 etc.
- 5) A student can successfully do Project work in any of the above firm.

**Minimum Hardware and Furniture Required for Computer Aided Designing  
(AutoCAD 2000) Trade under the aegis of SCVT pattern**

Sr. No.	Hardware and Furniture Specification	Quantity Reqd. for 4 Batches
1	Server With P- III or P- IV Processor @ 500 MHz. with 128 MB RAM, PCI Card 10.2 GB HDD 1.44 MB FDD 16 Bit Ethernet Card 52 x CD ROM Drive SVGA Color Monitor 101 Keyboard, Mouse, 56.6 Kbps. Modem Sound Card and Speakers + Microphone, Telephone with internet Connection .	1
2	Nodes With P-III Processors @ 500 MHz. with 64 MB RAM, PCI Card 10.2 GB HDD 1.44 MB FDD 16 Bit Ethernet Card SVGA Color Monitor 101 Keyboard, Mouse	20 +1 (In theory room)
3	5 KVA Stabilizer	2
4	0.5 KVA UPS for Server	1
5	16 Port Hub for LAN RJ 45 Connectors, UTP Cable	2 Hubs ( Cable and Connectors as for Requirement )
6	132 Column Dot Matrix Printer	1
7	Desk jet or Laser or Inkjet Printer	1
8	Scanner & Color Plotter	1 each
9	Window A.C. With 1.5 & 2 Ton Capacity	2 ( one of 1.5 Ton / one of 2 Ton )
10	Vacuum Cleaner	1
11	Computer Tables with Sunmica Top Having Sliding Tray for Keyboard and one shelf for Storage	20
12	Student Chairs with Castor and Adjustable Height Having Cushion	20
13	Cushion Fix Chairs with Rest arm and movable writing pad support	20
14	White Board	2
15	Over Head Projector or any other Multi-media type display device	1

**Note : Each Batch Comprising of 20 Students.**

**Software Required for Computer Aided Designing (AutoCAD 2000)**  
**Trade under the aegis of SCVT pattern**

Software Specification
Windows NT (Server) , Windows NT (Workstation )/Windows 98 ,AutoCAD 2000 <b>All Softwares should be licensed version.</b>

**Faculty Qualification** :Diploma in Computer Science/Computer Application/Computer Technology (2 years OR more) by any Institution approved by AICTE. OR BCA (3 year course) or MCA or BE (Computer Science) from any recognized university.

In addition to above, the faculty should have minimum 3 years of teaching experience in any reputed Computer Institute in respect of topics covered in the course.

**Faculty Requirement** :**FOR ONE BATCH** Minimum 2 faculties are needed with above qualification for 1 batches each of 25 students. (1 Faculty for theory and 1 faculties as a lab coordinator )  
**FOR TWO BATCHS** Minimum 3 faculties are needed with above qualification for 2 batches each of 25 students. (1Faculty for theory and 2 faculties as a lab coordinator )

**Note : Theory and practical should be conducted simultaneously for each batch of 25 students**

**Area Requirement** : For Practical Lab : 300 Sq. ft.  
For Theory Room : 200 Sq. ft.  
For Library Room : 150 Sq. ft.

Office Space, Pantry etc. should be there. Separate Toilet Facility for ladies and gents should be there.

**Total Area requirement for Institute is 1200 Sq. Ft. minimum in good locality.**

**Reference Books** : ABCs of Windows 98, ABCs of Windows NT 4.0 Workstation, Complete Reference, AutoCAD 2000 Instant Reference, Mastering AutoCAD 2000.

**Exam Pattern** : 1Hour Theory (100 marks) & 2 hours Practical (300 marks). Mid-term exam should be conducted after six months. Final examination should be conducted at the end of the course.

## Computer Aided Design (AutoCAD 2000) Main Topics & Duration

<b>Sr. No.</b>	<b>Topics</b>	<b>Course Duration in weeks</b>	<b>Total Theory Hrs</b>	<b>Total Practical Hrs.</b>
1	Computer Fundamentals	2	24	24
2	Windows NT 4.0 / Windows'98	2	24	24
3	AutoCAD 2000	18	216	216
4	Project	4	48	48
	<b>Total</b>	<b>26 weeks</b>	<b>312 hrs.</b>	<b>312 hrs.</b>

# **Computer Fundamentals & Windows'98**

## **Session wise Breakup**

### **WEEK - 1**

#### **Capabilities Of Computer**

- Speed
- Accuracy
- Versatility
- Storage Capacity
- Reliability
- Repetitive Work
- Automation
- Quality Control
- Sophistication

#### **Use Of Computer**

- Science Field
- Commerce Field
- DTP
- Cad/Cam
- Process Control
- Production Control
- CnC Industries
- Banks
- Communication
- Education
- Medical
- Research & Development

### **Week - 2**

#### **Limitations Of Computer**

- Cannot Think
- Cannot Learn From Mistakes
- Electricity Dependent
- High Cost
- Virus Problems
- No Privacy

#### **Working Of CPU**

- Input
- Process
- Output

#### **Computer System**

- Hardware
- Software
- Liveware

#### **Booting Procedure**

## **Windows '98**

### **Week wise Break-up**

#### **Week - 3**

- What Is An Operating System
- Why Os Is Required
- Types Of Operating System
- Specialties Of Windows'98
- Terms Often Used In Windows'98
- Windows 98 V/S Windows Nt
- Start Menu
- Taskbar
- Desktop
- Network Neighborhood

#### **Week - 4**

- Windows Explorer,
- Creating New Folder
- Short Cuts
- Removing Files & Folders
- Copying Files & Folders
- Moving Files & Folders
- Files & Sub Directories Etc.
- Recycle Bin
- Control Panel
- Accessories
- Local Printer Connection

## **AutoCAD 2000 Session Wise Break Up**

### **Week - 5**

#### **Welcome To AutoCAD 2000**

- Overview
- What's New In AutoCAD 2000
- Learning AutoCAD
- Migrating To AutoCAD 2000
- Getting Technical Support
- Where To Start
- Getting Help
- Typographical Conventions
- Additional Resources

#### **Getting Started**

- Starting AutoCAD
- Opening Existing Drawings
- Working With Multiple Drawings
- Understanding The AutoCAD Window
- Working With Toolbars
- Using Shortcut Menus
- Using Pointing Devices
- Refreshing The Screen Display
- Saving Drawings
- Closing Drawings
- Exiting AutoCAD

### **Week - 6**

#### **Setting Up Your Drawing Environment**

- Setting Drawing Units
- Modifying The AutoCAD Environment
- Viewing And Updating Drawing Properties
- Modifying Toolbars
- Creating And Editing Toolbar Buttons

#### **Using Commands And System Variables**

- Working With AutoCAD Commands
- Switching From Dialog Box To Command Line
- Using Scripts To Run Commands
- Using System Variables
- Correcting Mistakes
- Learning Commands And System Variables

**Week - 7**

**Using Coordinate Systems**

- Working With Cartesian And Polar Coordinate Systems
- Using Direct Distance Entry
- Shifting And Rotating The Coordinate System
- Displaying The UCS In Viewports
- Saving And Restoring A Named UCS

**Week - 8**

**Creating Objects**

- Drawing Lines
- Drawing Curved Objects
- Creating Point Objects
- Changing The Drawing Order Of Objects
- Creating Solid- Filled Areas
- Creating Regions
- Hatching Areas
- Custom And Proxy Objects
- Working With Named Objects

**Week - 9**

**Drawing With Precision**

- Adjusting Snap And Grid Alignment
- Snapping To Points On Objects
- Using Auto Tracks
- Using Point Filters
- Specifying Measurements And Divisions
- Drawing Construction Lines
- Calculating Points And Values
- Calculating Distance And Angles
- Calculating Areas
- Displaying Co-Ordinates And Locating Points
- Inquiry Methods

**Controlling The Drawing Display**

- Using Zoom And Pan
- Using Aerial View
- Using Named Views
- Using Tiled Viewports
- Turning Visual Elements On And Off

**Week - 10**

**Editing Methods**

- Selecting Objects
- Removing Objects From A Selection Set
- Using Groups
- Editing With Grips
- Editing Object Properties
- Matching Properties Of Other Objects
- Copying Objects
- Offsetting Objects
- Mirroring Objects
- Arraying Objects
- Moving Objects
- Rotating Objects
- Aligning Objects
- Erasing Objects
- Resizing Objects
- Inserting Break In Objects
- Exploding Objects
- Editing Plot Lines
- Editing Spines
- Chamfering Objects
- Filling Objects
- Editing Hatches
- Using Partial Open And Partial Load

**Week - 11**

**Using Layer And Object Properties**

- Working With Layers
- Using Layer Properties
- Working With Colors
- Working With Line Types
- Working With Line Weights

**Adding Text To Drawing**

- Using Line Text
- Using Multi-Line Text
- Working With Text Styles
- Substituting Fonts
- Specifying An Alternative Default Font
- Finding And Replacing Text
- Checking Spelling
- Using Text Editor For Multi-Line Text

**Week - 12**

**Creating Dimension**

- Dimensioning Concepts

- Creating Dimensions
- Dimensioning Multiple Objects
- Editing Dimension
- Creating Leader And Annotation
- Creating Dimension Style
- Managing Dimension Style
- Creating Arrowheads
- Adding Geometric Tolerances

**Week - 13**

**Using Blocks And External References**

- Working With Blocks
- Working With Attributes
- Using External References
- Clipping Blocks And Xrefs
- Editing References In Place

**Managing Content With AutoCAD Design Centre**

- Working With Drawing Content
- Viewing Content
- Using Palette
- Opening Drawing Using AutoCAD Designing Centre
- Finding Content
- Adding Content To Drawing
- Storing And Retrieving Frequently Used Content

**Week - 14**

**Creating Layout To Plot**

- Using Model Space And Paper Space
- Working In Paper Space
- Working With Layouts
- Using A Layout Template
- Determining Layout Setting
- Creating Floating Viewports
- Controlling Visibility In Floating Viewports
- Editing In Floating Viewports
- Creating Nonrectangular Viewports

**Week - 15**

**Plotting Your Drawing**

- Understanding Plotting
- Plotting In AutoCAD 2000
- Using Plot Styles

- Migrating Your Pen Setting From Previous Versions Of AutoCAD
- Electronic Plotting (ePlot)
- Batch Plotting
- Using Script Files

**Week - 16**

**Working In Three - Dimensional Space**

- Specifying 3D Coordinates
- Using Standard 3D Views And Projections
- Defining User Coordinate System
- Working With Multiple Viewports In 3D
- Working With Views In 3D
- Setting 3D Graphics Display Options
- Materials In 3D
- Setting The Camera Position
- Interactive Viewing In 3D
- Option For Viewing In 3D

**Creating Three Dimensional Objects**

- Creating Object In 3D
- Editing In 3D
- Changing 3D Solids

**Week - 17**

**Rendering And Imaging**

- Using 3D Image Type
- Drawing 3D Models
- Creating Hidden-Line Images
- Creating Rendered Images
- Using Render
- Using Render With Related Applications

**Week - 18**

**Working With Raster Images**

- Using Raster Images In Drawings
- Attaching And Scaling Raster Images
- Tuning Image Performance
- Managing Raster Images
- Accessing Raster Images Using The Internet
- Modifying Images And Image Boundaries

**Week - 19**

**Creating Compound Document With OLE**

- Understanding OLE Terminology
- Limitations Of OLE Objects In AutoCAD
- Linking And Embedding Information
- Using AutoCAD Information In Other Application
- Using Information From Other Applications In AutoCAD

**Week - 20**

**Accessing External Database**

- Understanding Database Connectivity
- Changes From Previous Releases
- Configuring A Database
- Using The Db Connect Manager
- Viewing Table Data From AutoCAD
- Working With Table Data
- Creating Labels
- Using Shortcut Menu Options For Links And Labels
- Working With The Query Editor
- Using Link Select To Create Selection Sets
- Working With External References And Blocks
- Converting ASE Link To AutoCAD 2000 Format
- Saving AutoCAD 200 Links To Earlier Formats

**Week - 21**

**Accessing The Internet**

- Using AutoCAD With The Internet
- Opening And Saving Files From The Internet
- Working With Hyperlinks
- Using ePlot To Publish DWF Files
- Working With Hyperlinks
- Using ePlot To Publish DEF Files
- Creating DWF Files For The WHIP! 3.1 Plug-In

**Week - 22**

**Using Other Files Formats**

- Working With Slides
- Creating Other Files Formats
- Using Files Creating In Other Formats

**Week - 23 to 26**

**Project**