

**Syllabus for AutoCAD Junior Draftsman**

<b>Course Name</b>	<b>AutoCAD Junior Draftsman</b>
<b>Course Code</b>	<b>STC-CON/ACJD/0809</b>
<b>Occupation</b>	AutoCAD Junior Draftsman
<b>Job Description</b>	CAD is the primary way in which drafters develop plans, drawings and sketches. Using AutoCAD software, created by Autodesk Inc., drafters prepare a visual depiction of a product to be constructed. Production and construction workers, including engineers, surveyors, architects and scientists, use CAD images to create plans to build and manufacture everything from building to toys to spacecrafts. AutoCAD drafters also have a working knowledge of traditional drafting methods.
<b>Anticipated Volume of Training</b>	600 Hrs (Theory:100 Hrs + Practical:290 Hrs + Employability Skill: 60 Hrs. + OJT 150 Hrs.)
<b>Trainees' Entry Qualification</b>	Class 8 pass and pursuing continuous regular schooling, OR Class 8 Pass with 1 year experience, OR Class 8 Pass + ITI, OR Class 10 Pass OR previous relevant qualification of NSQF Level 2 with 1 yr experience
<b>Trainers Qualification</b>	BE/ B Tech in Civil Engineering / Mechanical Engineering / Architecture with 2 Yrs experience OR Diploma in Civil Engineering / Mechanical Engineering / Architecture with 4 Yrs experience OR ITI in draughtsman – Civil / draughtsman Mechanical with 5 Yrs experience.

**Structure of Course:**

Module No.	Outcome	Theory (Hrs)	Practical (Hrs)	Total (Hrs)
1	Perform computer application with knowledge of hardware and software and create drawing in Auto CAD using commands and tools.	15	45	60
2	Demonstrate the use of layer property management, different tools and commands that helps add information to text along with dimensioning the drafting.	15	45	60
3	Draw isometric projection and the application of isometric drawing (Plane and curvature block)	20	70	90
4	Explain the importance of geometric dimensions with tolerance, fundamental of attribute along with frequently used symbols, application of enquiry tools, layout, plotting, publishing, data exchanging & embedding in AutoCAD.	20	70	90
5	Demonstrate the use of 2D objects and modify them using the 3D commands along with different editing tools used for the same.	30	60	90
6	OJT			150
7	Employability skill 60 hrs			60
TOTAL:		100	290	600

**SYLLABUS:**

**Module No. 1:** Perform computer application with a knowledge of hardware and software and create drawing in Auto CAD using commands and tools.

**Theory Content:****Introduction to Computers and Windows Operating System**

Advantages and applications of computers. Concepts of hardware and Software. Introduction to the functions of an operating system. Popular operating systems in use. Various input / output devices in use and features. Using scanner, printer and plotter. Knowledge of installation of application software.

**Introduction to CAD (Computer Aided Design)**

Introduction to CAD and advantage of CAD in engineering field. Identify the screen nomenclature of AutoCAD and discuss the main menu, screen menu command line, model space, layout Space and work space. Theory of drawing settings unit and limits, pan and zoom. Drafting settings – grid, polar tracking, object snap, 3D object snap and dynamic input.

**Coordinate system, Function Key and File System**

Theory of coordinate system - absolute coordinate system, relative coordinate system and polar coordinate system. Details description of function key. AutoCAD file creation, save and open existing drawing.

**Theory of Drafting Tool**

Details theory of line, polyline, circle, polygon, arc, rectangle, ellipse, elliptical arc, hatch, spline, construction line, multiline, multiline style, ray, point, divide, boundary, region, wipeout, revision cloud and measures options etc.

**Theory of Modifying Tool**

Details theory of move, rotate, trim, copy, mirror, fillet, chamfer, polar array, rectangular array, path array, erase, explode, offset, lengthen, edit polyline (fill on/off), edit spline, edit hatch, edit array, edit multiline, pmode, grip editing, psize, align, break, point break and join. Object properties – Properties of windows, colour, linetype, linetype scale, line weight and match properties.

**Practical Content:****Introduction to computers and windows operating systems.**

Introduction to computers and windows operating systems. Create a new folder, add sub folders. Create applications files. Change the appearance of windows. Search files, sort files, copy files and shortcut folder and create shortcut icons on the desktop. Move files from removable disk. Create, save and print a document, worksheet and PDF files.

**Project Content:****PROJECT-I**

Working with MS Paint with 10 sketches

**Introduction to CAD (Computer Aided Design)**

Change the workspace-drafting and annotation. setting toolbar as per requirement. Use mouse buttons, menu, pan and zoom. Locate origin and set graphical limit of drawing space.

Use command from command line and also use command from menu bar and floating toolbar.

Drag and drop figures from tool palettes.

**Application of Coordinate system, Function Key and File System**

Create 2D object drawing using coordinate system - absolute coordinate system, relative coordinate system and polar coordinate system. Apply the concept of function key in drawing and also use file creation, save and open existing drawing.

**Application of Draw Toolbar**

Draw 2D objects or create geometrical figure using line, polyline, circle, arc, rectangle, donut, ellipse, elliptical arc, hatch, gradient, boundary, hatch settings, fill or fill Mode, spline, construction line, ray, point, divide, boundary, region, wipeout, revision cloud and measures.

**Modify Tool Application**

Manage 2D objects or modify geometrical figure using commands move, rotate, trim, copy, mirror, fillet, chamfer, polar array, rectangular array, path array, erase, explode, offset, lengthen, edit polyline, edit spline, edit hatch, edit array, align, break, point break, and join. Apply the concept of object properties – properties of windows, colour, linetype, linetype scale, line weight and match properties.

**Project Content:****Project-II**

Draw 10 nos. Lamina drawing without dimensions

**Module No. 2:** Demonstrate the use of layer property management, different tools and commands that helps add information to text along with dimensioning the drafting.

**Theory Content:****Layer Property Management**

Theory of adding / removing Layers. Layer status new property filter. New group filter. Layer status Manager. Line type and Plot.

**Annotation Tools**

Details theory of text, text setup style, setting single line text, multiline text, inserting text, scale text, arc text, Mirrtext, edit text, spell, table, table Style and table edit.

**Template Management**

How to use standard templates and setup new templates, inserting drawings sheet on job.

**Dimensions**

Theory of dimensions - linear, aligned, radius, diameter, angle, arc length, continuous, baseline, dimensions space, dimensions break, inspection, jogged radius, ordinate dimensions, leader, Q-leader, multi leader, multi leader style, add leader, aligned leader, remove leader, dimensions text angle, dimensions text alignment and quick dimensions.

**Practical Content:****Layer Application**

Uses of layer and apply the concept on various drawing – layer on / off. freeze or thaw in all viewports and current viewport. lock and unlock application in Layer, apply colour line type and plot management on various drawings.

**Application of Annotation Tools**

Application of text, text setup style and setting, single line text, multiline text, inserting text, scale text, arc text, mirrtext, edit text, spell, table, table Style and table edit.

**Template Application**

Create templates and insert drawings.

**Dimensions Application**

Use dimensioning technique on drawings through different process - linear, aligned, radius, diameter, Angle, arc length, continuous, baseline, dimension space, dimensions Break, inspection, jogged radius, ordinate dimensions, leader, Q-leader, multi Leader, multi leader Style, add leader, aligned leader, remove leader, dimensions text Angle, dimensions text alignment, quick dimension.

**Project Content:****Project-III (2D Drawings)**

- 1.1 Put complete dimensions of lamina which already drawn in 2D format (10 hrs)
- 1.2 M24x3x125 LG hexagonal bolt, nut and washer with complete dimensions (08 hrs)
- 1.3 1<sup>st</sup> angle & 3<sup>rd</sup> angle Projection symbol (2 hrs.)
- 1.4 Draw a flange coupling with complete dimensions, where the dia of shaft is 40mm. (10 hrs.)
- 1.5 A one room building 7000x5000 consists of a front veranda 2000 wide. The following data are given – Plinth height 450, Thickness of main wall 250, Height of lintel 2100 from finished floor level, Ceiling height 3000. Door 1200x2100 and window 1000x1500 with complete dimensions (All dimensions are in mm) (12hrs.)
- 1.6 Draw Steel shapes – Beams (I-Shape), Angle (L-Shape), Channels (U-Shapes), Rectangular hollow and Circular hollow shapes with complete dimensions. (8 hrs.)

**Module No. 3:** Draw isometric projection and the application of isometric drawing (Plane and curvature block)

**Theory Content:****Isometric**

Theory of isometric axes and plane isometric drawing, isometric grid, isometric dimensions. isometric text.

**Practical Content:****Application of Isometric**

Construct isometric view of mechanical block (Plane and Curvature), Isometric diagram, isometric piping drawing. Application of dimensions in isometric drawing including Isometric Text.

**Project Content:****Project-IV (Isometric and Perspective)**

1.1 Plane mechanical block with complete dimensions – 5 nos.

1.2 Curvature mechanical block with complete dimensions – 5 nos.

**Module No. 4:** Explain the importance of geometric dimensions with tolerance, fundamental of attribute along with frequently used symbols, application of enquiry tools, layout, plotting, publishing, data exchanging & embedding in AutoCAD.

**Theory Content:****Geometric Dimension and Tolerance.**

Definition and importance of geometrical dimensions and tolerance, geometric character and symbol, geometric tolerance components.

**Block**

Theory of create block, write block, edit block, inserting block and dynamic block.

**Attribute**

Theory of attributes - Define attribute, attribute edit, edit single and multiple attribute, attribute display, manage attribute, Attdia, Atttext, Eatttext

**Parametric**

Basic knowledge of geometric constraints, dimensional constraints, delete Constraints.

**Enquiry**

Theory of ID, dist., list, area and mass properties.

**Layout, Plot and Publish**

Theory of model space, paper space, viewport, plotting and scale plotting. Layout of page setup.

**Object Linking, Data Exchange and Embedding**

Data exchange in AutoCAD where data interchange through raster files. Object linking and embedding. BOM creation on drawing Sheet.

**Practical Content:****Geometric Dimension and Tolerance**

Practical application of geometrical symbols and tolerances on production drawing

**Block**

Practical application of create block, write block, edit block, inserting block and dynamic block.

**Application of Attribute**

Practical application of attributes - Define attribute, attribute edit, edit single and multiple attribute, attribute display, manage attribute, Attdia, Atttext, Eatttext

**Parametric**

Application on drawing various constrain symbols and apply auto-constrain method.

**Enquiry**

Information of co-ordinate, distance, angle, area, volume, mass, moments of Inertia etc.

**Layout, Plot and Publish**

Practical application of paper space layout & page setup, working with view ports, view lock and unlock, View port layer management, plot style, plot in model, and layout Area. Publish and Publish to Web.

**Object Linking, Data Exchange and Embedding**

Practice Copy, copy base, copylink, pasteclipand Insert object, Apply data exchange through (Import & Export) DXFIN and DXFOUT. Application of raster images and edit raster images files, Ole links, Ole scale and hyperlink.

**Project Content:****Project-V**

Geometrical dimensions and tolerance applications on a Mechanical Job.

**Project-VI**

Attribute apply in drawing title block.

**Module No. 5:** Demonstrate the use of 2D objects and modify them using the 3D commands along with different editing tools used for the same.

**Theory Content:****3D Foundations and Creating Solids**

Why use 3D? Types of 3D models. Introduction to the 3D modeling Workspace, 3D ribbon panels. Basic 3D viewing Tools, preset 3D views and orbiting in 3D. using visual styles. 3D Navigation Tools view Cube steering wheel. Introduction to the user coordinate system (UCS) and dynamic UCS. UCS Basics, UCS icon. moving the UCS origin, moving the UCS to a Face, moving the UCS Using 3 Points, UCS X, Y, and Z commands. UCS multi-functional grips and saving a UCS.

**Solid Editing**

Theory under solid tabs and solid editing panels – Where and how to use slice, thicken, imprint, interface, extrude edge, offset edge, Fillet edge, chamfer edge, taper face, extrude face, offset face, shell, check, separate and clean.

**Creating Solids & Surfaces from 2D Objects**

Complex 3D geometry. extruded solids and surfaces Presspull. modifying extrusions. Swept solids, surfaces and also modifying sweeps 3D Paths. Revolved solids surfaces and modifying revolves. Lofted solids, surfaces and modifying Lofts. NURBS Surfaces. Creating NURBS Surfaces. Edit NURBS Surfaces.

**Advanced Solid Editing.**

Editing components of Solids. Editing faces, edges, extruding faces. offsetting faces and Moving faces, rotating faces. tapering faces. removing faces, copying faces. Fillets and chamfers on solids.

**Additional Editing Tools**

Practice Creating a Shell. Solid Imprinting Edges on an object. Interference Checking. Converting Objects to Surfaces and Solids.

**Mesh modeling**

Theory of 3D Basic Mesh form known as Mesh Primitive object such as Box, Cone, Cylinder, Pyramid, Sphere, Wedge, and Torus. How to Modify Faces, Edges and Vertices by Stretching, Pulling Edge and also Reshape, Creasing, Refining and Splitting Faces.

**Manage Camera and Animating**

Define one or more Cameras with the Camera Command Including Camera Location, Target, Direction and Lens Length.

**Visual Styles Manager**

Lighting Setting. Use of Material Library, Create Material Library – Add – Delete – Rename. Basic Concept of Rendering.

**Practical Content:****3D Foundations and Creating Solids**

Under Home show tab and Modelling show panels – (Primitive, Solid, Boolean) Practice 3D primitive - box, cylinder, sphere, polysolid, wedge, cone, pyramid, and torus.

Practice extrude, presspull, revolve, and sweep. practice union, subtract, intersect and brep. Practice 3D navigation tools on a drawing. Command: Pan and zoom. Clear the concept of viewcube. Practice working with solid primitives and composite solids. Modifying solid primitives and composite solids. Practice Using UCS under Home show tabs and Co-ordinate panels. Use X,Y and Z axis on job..

**Solid Editing**

Practice the model under solid tabs and solid editing panels – Where and how to use slice, thicken, imprint, interface, extrude edge, offset edge, Fillet edge, chamfer edge, taper face, extrude face, offset face, shell, check, separate and clean.

**Creating Surfaces from 2D Objects**

Creating surfaces using network, loft, sweep, planner, extrude, revolve, blend, patch, and offset. Extruding along a path. Creating a sweep solid. Sweeping along a 3D polyline. Sweeping along a helix. Creating revolved solids. A lofted solid. Basic Solid and Surface Editing. Create and Edit a NURBS Surface – Fillet, Trim, Untrim, Extend, Sculpt, Spline and Blend Curves.

**Advanced Solid Editing**

Practice on Editing components of Solids. Editing faces, edges, extruding faces. offsetting faces and Moving faces, rotating faces. tapering faces. removing faces, copying faces. Fillets and chamfers on solids.

**Additional Editing Tools**

Practice Creating a Shell. Solid Imprinting Edges on a object. Interference Checking. Converting Objects to Surfaces and Solids.

**Mesh modeling**

Practice 3D Mesh Primitive with Specific figures. Modify Faces, Edges and Vertices by Stretching, Pulling Edge and also Reshape, Creasing, Refining and Splitting Faces.

**Manage Camera and Animating**

Create and place the **cameras** into the 3D Model and Managing the Views.

**Visualization**

Practice Creating Visual Styles. Working with Materials. Creating a Sun Study. Placing Lights in a Model. Apply Rendering on 3D Models

**Project Content:****Project-VII** (Project Regarding Solid Modeling.)

Practice working with solid primitives with specific figures.

3D Mechanical block plane and curvature -10 nos.

**Project-VIII** (Project Regarding 3D Surface Modeling.)

3D Mechanical Surface Modelling Block Plane and Curvature -12nos.

**Project-IX** (Project Regarding 3D Mesh Modeling.)

Computer Chair With Handle making 3D Mesh Modeling.

**Project-X (Working 3D Models)**

Convert 3D Block to 2D Drawing which already create (12hrs.)

Various Spring Drawing (4 hrs.)

Stop Valve Body Conversion of 3D to 2D Drawing (12 hrs.)

Covert Spur Gear From 3D to 2D Drawing (08 hrs.)

Assembly and Details Drawing of Knuckle Joint 3D to 2D Drawing (12 hrs.)

Assembly and Details Drawing of Screw Jack 3D to 2D Drawing (16 hrs.)

**Module No.- 6: OJT**

**Outcome:** Work in real job situation with special emphasis on basic safety and hazards in this domain

**Practical Content:**

Assessor will check report prepared for this component of Practical training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor for **60 Hours**.)

**Module No - 7: Employability Skills (60 Hrs)**

**Employability Skills (60 hours)**  
**Model Curriculum**

**Module Summary:**

S. No	Module Name	Duration (hours)	Assessment Marks
1.	Introduction to Employability Skills	1.5	2
2.	Constitutional values - Citizenship	1.5	2
3.	Becoming a Professional in the 21st Century	2.5	6

4.	Basic English Skills	10	6
5.	Career Development & Goal Setting	2	3
6.	Communication Skills	5	4
7.	Diversity & Inclusion	2.5	2
8.	Financial and Legal Literacy	5	5
9.	Essential Digital Skills	10	8
10.	Entrepreneurship	7	4
11.	Customer Service	5	3
12.	Getting Ready for Apprenticeship & Jobs	8	5
	<b>Total</b>	<b>60</b>	<b>50</b>

### Key Learning Outcomes

#### Introduction to Employability Skills Duration: 1.5 Hours

After completing this programme, participants will be able to:

1. Discuss the Employability Skills required for jobs in various industries
2. List different learning and employability related GOI and private portals and their usage

#### Constitutional values - Citizenship Duration: 1.5 Hours

3. Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen
4. Show how to practice different environmentally sustainable practices.

#### Becoming a Professional in the 21st Century Duration: 2.5 Hours

5. Discuss importance of relevant 21st century skills.
6. Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life.
7. Describe the benefits of continuous learning.

#### Basic English Skills Duration: 10 Hours

8. Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone
9. Read and interpret text written in basic English
10. Write a short note/paragraph / letter/e -mail using basic English

#### Career Development & Goal Setting Duration: 2 Hours

11. Create a career development plan with well-defined short- and long-term goals

#### Communication Skills Duration: 5 Hours

12. Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.
13. Explain the importance of active listening for effective communication
14. Discuss the significance of working collaboratively with others in a team

#### Diversity & Inclusion Duration: 2.5 Hours

15. Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD
16. Discuss the significance of escalating sexual harassment issues as per POSH act.

#### Financial and Legal Literacy Duration: 5 Hours

17. Outline the importance of selecting the right financial institution, product, and service
18. Demonstrate how to carry out offline and online financial transactions, safely and securely
19. List the common components of salary and compute income, expenditure, taxes, investments etc.
20. Discuss the legal rights, laws, and aids

#### Essential Digital Skills Duration: 10 Hours

21. Describe the role of digital technology in today's life
22. Demonstrate how to operate digital devices and use the associated applications and features, safely and securely
23. Discuss the significance of displaying responsible online behavior while browsing, using various social media platforms, e-mails, etc., safely and securely
24. Create sample word documents, excel sheets and presentations using basic features

25. utilize virtual collaboration tools to work effectively

**Entrepreneurship Duration: 7 Hours**

26. Explain the types of entrepreneurship and enterprises  
 27. Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan  
 28. Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement  
 29. Create a sample business plan, for the selected business opportunity

**Customer Service Duration: 5 Hours**

30. Describe the significance of analyzing different types and needs of customers  
 31. Explain the significance of identifying customer needs and responding to them in a professional manner.  
 32. Discuss the significance of maintaining hygiene and dressing appropriately

**Getting Ready for apprenticeship & Jobs Duration: 8 Hours**

33. Create a professional Curriculum Vitae (CV)  
 34. Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively  
 35. Discuss the significance of maintaining hygiene and confidence during an interview  
 36. Perform a mock interview  
 37. List the steps for searching and registering for apprenticeship opportunities

**Learning Outcome–Assessment Criteria**

Module No.	Outcome	Assessment Criteria
1	Perform computer application with a knowledge of hardware and software and create drawing in Auto CAD using commands and tools.	<p><b>After completion of this module students will be able to:</b></p> <p>1.1 State the basic features and applications of various input and output devices.            1.2 Explain the installation procedure of application software.            1.3 State the different functions of operating systems.            1.4 Identify the screen nomenclature and applications of AutoCAD in engineering field.            1.5 Setup drawing unit and limits, pan &amp; zoom.            1.6 Explain different coordinate system and make use of function key, file system.            1.7 Develop 2D drawing creation in AutoCAD platform with help of some Important Commands.            1.8 Demonstrate the application of different modifying tools in respect of 2D drawing.</p>
2	Demonstrate the use of layer property management, different tools and commands that helps add information to text along with dimensioning the drafting.	<p><b>After completion of this module students will be able to:</b></p> <p>2.1 Explain different functions of Layer Property Management            2.2 Identify the application of different tools that helps - add information to text, an image and a database.            2.3 Choose different templates for design and drawing work.            2.4 Identify and make use of different dimensioning technique in drawings.</p>

Module No.	Outcome	Assessment Criteria
3	Draw isometric projection and the application of isometric drawing (Plane and curvature block)	<b>After completion of this module students will be able to:</b> 3.1 Explain the isometric view of mechanical block (Plane and Curvature). 3.2 Draw different isometric diagram, isometric piping drawing. 3.3 Determine the application of dimensions in isometric drawing.
4	Explain the importance of geometric dimensions with tolerance, fundamental of attribute along with frequently used symbols, application of enquiry tools, layout, plotting, publishing, data exchanging & embedding in AutoCAD.	<b>After completion of this module students will be able to:</b> 4.1 Define the importance of geometrical dimensions and tolerance, geometric character and symbol, geometric tolerance components. 4.2 Develop a library of frequently used symbols or parts through block. 4.3 Demonstrate the fundamental theory of attributes. 4.4 Discuss geometric constraints, dimensional constraints, delete Constraints. 4.5 Classify various constraints symbols and their applications. 4.6 Identify enquiry tools and their applications. 4.7 Demonstrate the application of layout, plot and publish. 4.8 Utilize Object Linking, Data Exchange and Embedding in AutoCAD.
5	Demonstrate the use of 2D objects and modify them using the 3D commands along with different editing tools used for the same	<b>After completion of this module students will be able to:</b> 5.1 Classify 3D models. 5.2 Introduce the user co-ordinate system (UCS) and dynamic UCS. 5.3 Use 2D objects and modify them using the 3D commands 5.4 Identify different solid editing commands and their applications. 5.5 Construct the solids and surfaces from 2D objects. 5.6 Develop the knowledge of Building solid and surface editing. 5.7 Demonstrate different additional editing tools. 5.8 Construct the Knowledge of Building 3D Mesh Model Creation and Editing. 5.9 Utilize camera with the help of different commands. 5.10 Organize and make use of Visual Styles Manager.

<b>Trainees Equipment / Software / Tools &amp; Furniture For A Batch Of 30 Trainees</b>		
<b>Sl. No.</b>	<b>Name of the Items</b>	<b>Quantity</b>
1	Desktop computers of the latest configuration prevalent at the time of procurement or with the following minimum features : CPU: 64 Bit i3/i5,Speed: 3 GHz or higher, Cache memory: Minimum 3 MB or better. RAM: 8 GB DDR-IV or Higher. Hard Disk Drive: 1 TB or Higher, 7200 rpm(minimum) or Higher, Wi-Fi enabled. Network Card: Integrated Gigabit Ethernet (10/100/1000)-Wi-Fi, USB Mouse, USB Keyboard & Monitor(Min. 22 Inch),Standard Ports & Connectors. Licensed Windows Operating System, Antivirus/Total Security,2 GB Graphics Card.	30 Nos
2	Laptop 4th Gen Ci5 Processor,16 GB RAM,1 TB Hard Disk,Win10 Preloaded Licensed OS,2 GB Graphics Card, Standard Ports & connectors.	01 No
3	Wi-Fi Router/48 Port Switch with Wireless Connectivity option.	01 No
4	Lab should have structured cabling(to enable working with Wired Networks too Practical)	As Required
5	Internet or Intranet Connectivity	As Required
6	Network Monochrome Laser Printer A3 Size	01 No.
7	Optical Scanner(Flatbed A4)	01 No.
8	LCD Projector with Matte(Antiglare) Screen	01 No.
9	KVA Online UPS	
10	External Solid State Hard Disk 1 TB	02 Nos.
11	LAN Setup	As Required

<b>SOFTWARE PER UNIT</b>		
<b>Sl. No.</b>	<b>Name of the Items</b>	<b>Quantity</b>
1	MS Office 2010(Professional) or the latest version available at the time of procurement	31 Licenses
2	Antivirus for - clients / workstations in profile with validity of an year or more which should be renewed on expiry	31 Licenses
3	Autocad Software	31 Licenses

**Marks Distribution**

Perform computer application with knowledge of hardware and software and create drawing in Auto CAD using commands and tools.	CON/0809/OC1	20	80	0
Demonstrate the use of layer property management, different tools and commands that helps add information to text along with dimensioning the drafting.	CON/0809/OC2	20	80	0
Draw isometric projection and the application of isometric drawing (Plane and curvature block)	CON/0809/OC3	30	120	0
Explain the importance of geometric dimensions with tolerance, fundamental of attribute along with frequently used symbols, application of enquiry tools, layout, plotting, publishing, data exchanging & embedding in AutoCAD.	CON/0809/OC4	30	120	0
Demonstrate the use of 2D objects and modify them using the 3D commands along with different editing tools used for the same.	CON/0809/OC5	50	100	0
OJT	CON/0809/OC6	0	0	300
Employability skill	DGT/VSQ/N0102	50	0	0