

# GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

## COURSE CURRICULUM

**Course Title: Computer Aided Drawing  
(Code: 3340606)**

Diploma Program in which this course is offered	Semester in which offered
Civil Engineering	4 <sup>th</sup> SEMESTER

### 1. RATIONALE

Drawing is the tool by which Civil Engineer can transform engineering detailing like layout of site , Plan , Elevation , Section with interior details and design output to Office , Client , concern authority for execution , approval and for other works.

Formerly , such drawing were prepared manually resulted in to time consuming process , repetition of work for editing again resulted in to wastage of stationary and time of human resources.

At present , all Civil Engineers and Architects are using Computers and Graphical Software to generate necessary drawings with high precision and using less time compared to manual drafting.

### 2. COMPETENCY (Programme Outcomes (POs) According to NBA terminology)

The course content should be taught and implemented with the aim to develop with different types of skills so that students are able to acquire following competencies:

- (i) Develop 2D and 3D drawings of Residential & Commercial Building using AutoCAD

### 3. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE	PA	ESE	PA	100
00	00	04	04	00	00	40	60	

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit; ESE - End Semester Examination; PA - Progressive Assessment

#### 4. COURSE DETAILS

Unit	Major Learning Outcomes (Course Outcomes in Cognitive Domain according to NBA)	Topics and Sub-topics
<b>Unit – I</b>  <b>Introduction to AutoCAD</b>	1 Prepare a drawing file using basic draw and modify commands with file menu	1.1 File menu of AutoCAD with New , Open , Save , Save AS and Close 1.2 Basic 2D Draw commands like Line , Circle , Ellipse , Multi Line , Construction Line , Polyline , Point , Donut , Ellipse , Polygon , Rectangle , Arc 1.3 Erase , Snap , Redraw , Regenerate , Zoom , Pan
<b>Unit – II</b>  <b>Editing of AutoCAD Drawing</b>	2 Modify AutoCAD Drawing	2.1 Modify Properties of Drawing Entity 2.2 Copy , Move , Rotate , Mirror , Offset , Array , Scale , Stretch , Lengthen , Trim , Extend , Break , Chamfer , Fillet 2.3 Block , WBlock , Insert and Explode , Area and Volume with Civil Engineering Application
<b>Unit – III</b>  <b>Advanced 2DCommands</b>	3.1 Prepare Drawings using Different Layers  3.2 Develop Drawings with Dimension and Text and Hatching	3.1 Application of LAYER command in Civil Engineering 3.1.1 Layer command with its all sub commands , Line type , Color 3.2 Dimension command – linear , aligned , arc length , radius , Diameter , Centre , Leader , Baseline and Continuous Dimensioning ,tolerance , override and Dimension updates 3.2.1 Text and DTEXT commands with Text Style 3.2.2 Hatch command
<b>Unit – IV</b>  <b>3D Commands of AutoCAD</b>	4.1 Prepare 3D Drawings using 3D Commands of AutoCAD	4.1 Units , Elevation , Thickness , UCS and UCS Icon 4.1.1 Viewports , Extrude , 3D Solids – Sphere , Box , Cylinder , Cone , Wedge , Interference 4.1.2 3D Surface – Revolved , Tabulated and Ruled Surfaces 4.1.3 Hide , Render and Shade of 3D drawings

Unit	Major Learning Outcomes (Course Outcomes in Cognitive Domain according to NBA terminology)	Topics and Sub-topics
Unit – V Plot of 2D & 3D Drawings	5. Plot 2D and 3D Civil Engineering Drawings	5.1 PLAN , ELEVATION and 3D Views of Residential Building and Commercial Building 5.2 PLOT and its Sub Command for Plotting Drawing on A1 , A2 and A3 Size Paper using Printer and / or Plotter

## 5. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (THEORY)

Unit	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Introduction to AutoCAD	04	00	00	00	00
II	Editing AutoCAD Drawing	08	00	00	00	00
III	Advanced 2DCommands	14	00	00	00	00
IV	3D Commands of AutoCAD	12	00	00	00	00
V	Plot of 2D & 3D Drawings	18	00	00	00	00
<b>Total</b>		<b>56</b>	<b>00</b>	<b>00</b>	<b>00</b>	<b>00</b>

Legends: R = Remember , U = Understand , A= Apply and above Level ( Bloom's revised taxonomy )

Note : This specification table shall be treated as only general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table

## 6. SUGGESTED LIST OF EXERCISES/PRACTICAL

The practical/exercises should be properly designed and implemented with an attempt to develop different types of skills ( **Course outcomes in psychomotor and effective domain** ) so that students are able to acquire the competency. Following is the list of experiments for guidance.

S. No.	Unit No.	Practical/Exer cise	Apprx. Hrs. Required
1	I	Draw Two Basic 2D Figures	04
2	II	Draw Four Civil Engineering Sketches	08
3	III	Draw Four Civil Engineering Sketches	14
4	IV	Draw Four 3D Geometrical Figures	12
5	V	Develop PLAN , ELEVATION and 3D Views of One Residential and One Commercial Building	18
<b>TOTAL</b>			<b>56</b>

## 7. SUGGESTED LIST OF STUDENT ACTIVITIES

1. Visit to Architect / Civil Engineer Firm for CAD environment
2. Collect Different Types of Civil Drawings in Hard Copy from Architect , Builder , Engineer

## 8. SUGGESTED LEARNING RESOURCES

### A. List of Books:

S. No.	Title of Books	Author	Publication
1.	AutoCAD Manual	-----	Microsoft AutoDesk
2.	AutCAD – A problem solving Approach – 2013 & Beyond	Shamtikoo	AutoDesk
3.	Mastering AutoCAD	George Omura	Wily India
4.	AutoCAD	Rubenstein	Delmar

### B. List of Major Equipment/Materials

1. Computer at least Intel Core 2 Dual wit Mouse and Key Board
2. Printer and/or Plotter

### C List of Software/Learning Websites

1. Authentic AutoCAD version 2006 or Higher
2. [www.augi.com](http://www.augi.com)
3. Autodesk web site

## 9. INSTRUCTIONAL STRATEGICS:

Subject Teacher will use Projector to explain use of AutoCAD commands.

Subject Teacher will collect different commercial drawings prepared through AutoCAD and will show to students to motivate to prepare such type of Drawings.

## 10. COURSE CURRICULUM DEVELOPMENT COMMITTEE

### Faculty Members from Polytechnics

1. PROF. B G RAJGOR, H.O.D, APP. MECH. , BBIT , V V NAGAR
2. Prof. Ravi R Gurnani, Lecturer in Civil, T F G, Adipur
3. Prof. C.H.BHATT, DR. S.&S.S. GHANDHY COLLEGE, SURAT
4. Prof. K K PATEL , H.O.D, G. P - Rajkot

### Coordinator and Faculty Members from NITTTR Bhopal

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