

GANPAT UNIVERSITY					
FACULTY OF DIPLOMA ENGINEERING					
Programme	Diploma in Civil Engineering				
Semester	III		Version	1.0.0.0	
Effective from Academic Year		2026-27	Effective for the batch Admitted in		JULY 2025
Course code	1CI3106	Course Name	Drafting tool		

I. TEACHING-LEARNING AND ASSESSMENT SCHEME																	
Course Type	Course code	Course Title	Teaching & Learning Scheme							Examination Scheme							
			Credit				Actual Contact Hrs/week			SLH	Total Learning Hrs/Week	TH			PR		
			CL	TL	LL	Total	CL	TL	LL			CE	SEE	Total	CE	SEE	Total
DSC	1CI3106	Drafting Tool	0	0	1	1	0	0	2	0	2	0	0	0	30	20	50
																20	70

Abbreviation:	CL- Classroom Learning	TL - Tutorial Learning	LL - Laboratory Learning
	SLH - Self Learning Hours	NLH - Notional Learning Hours	SLA - Self Learning Assessment
	FA - Formative Assessment (Term work +Mid Sem Exam +Attendance)		SA - Summative Assessment

II. PRE-REQUISITES					
The students should know basic fundamental of subject engineering drawing, building drawing and software tools.					
III. INDUSTRY / EMPLOYER EXPECTED OUTCOMES					
Students will be able to prepare accurate 2D and 3D AutoCAD drawings for civil engineering works and plot them professionally.					
IV. COURSE LEARNING OUTCOMES					
At the end of the course, students will be able to achieve the following course learning outcomes: CO1. Use AutoCAD file tools and basic 2D commands to create civil engineering drawings. CO2. Apply editing and modify commands to update and refine drawings. CO3. Use layers, dimensioning, text and hatching to produce professional 2D drawings. CO4. Generate 3D models/views using AutoCAD 3D commands with rendering/shading. CO5. Plot and print 2D/3D drawings on A1/A2/A3 sheets with proper scale and settings.					
V. THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT:					
Name of Unit	Theory Learning outcomes (TLO's) aligned to CO's		Learning Content mapped with Theory Learning outcomes (TLO's) & CO's		Marks
Unit-1 Introduction to Civil Engineering Software	TLO 1.1 Demonstrate the basics of AutoCAD software and its important commands. TLO 1.2 Prepare a simple building drawing file using basic draw and modify commands. TLO 1.3 Demo lecture of R.C. Beam (Analysis and design) in Staad pro.		1.1 File menu of AutoCAD with New, Open, Save, Save as and Close. 1.2 Basic 2D commands like Line, Circle, Ellipse, Multi Line. 1.3 Construction Line, Polyline, Point, Donut, Ellipse, Polygon, Rectangle, Arc. 1.4 Erase, Snap, Redraw, regenerate, Zoom, Pan.		--
Unit-2 Editing of AutoCAD drawing	TLO 2.1 Explain the applications of Edit commands. TLO 2.2 Modify existing AutoCAD Drawing.		2.1 Modify Properties of Drawing. 2.2 Copy, Move, Rotate, Mirror, Offset. 2.3 Array, Scale, Stretch, Lengthen, Trim. 2.4 Extend, Break, Chamfer, Fillet.		--
					06
					04

	TLO 2.3 Apply advanced command for edit /modification of drawing.	2.5 Block, WBlock, Insert and Explode, Area and Volume with Civil Engineering Application.		
Unit-3 Advanced 2d commands	TLO 3.1 Prepare typical Drawings Using Different Layers. TLO 3.2 Develop final Drawings with Dimension and Text and Hatching.	3.1 Application of LAYER command in Civil Engineering. 3.2 Layer command with its all-sub commands, Line type, Colour. 3.3 Dimension command – linear, aligned, arc length, radius, diameter, Centre, Leader, Baseline and Continuous Dimensioning, tolerance, override and Dimension updates. 3.4 Text and DTEXT commands with Text Style Hatch command.	--	06
Unit-4 3d Commands of AutoCAD	TLO 4.1 Use 3D commands to generate 3d view from 2D drawing. TLO 4.2 Prepare 3D Drawings using 3D Commands of AutoCAD. TLO 4.3 Perform rendering/shading on 3d drawing.	4.1 Units, Elevation, Thickness, UCS and UCS Icon. 4.2 Viewports, Extrude, 3D Solids, Sphere, Box, Cylinder, Cone, Wedge, Interference. 4.3 3D Surface Revolved, Tabulated and Ruled Surfaces. 4.4 Hide, Render and Shade of 3D drawings.	--	08
Unit-5 Plot Of 2d & 3d Drawings	TLO 5.1 Setup printer, plotter for Printing of drawings. TLO 5.2 Plot 2D and 3D Civil Engineering Drawings as per requirement on different scale and sizes.	4.1 Plan, Elevation and 3D Views of Residential and Commercial Building. 4.2 Plot and its Sub Command for Plotting Drawing on A1, A2 and A3 Size Paper using Printer and / or Plotter.	--	06

VI. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL			
Sr. No.	Practical/Laboratory Learning Outcome (LLO)	Practical Titles	Relevant COs
1	LLO 1. Draw at least four basic 2D objects in AutoCAD.	Draw Basic 2D objects such as line circle, polygon - (at least 04 objects)	CO1, CO2
2	LLO 2. Create simple rectangular room plans as per given dimensions.	Draw a simple plan of a rectangular room or layout of given dimensions (2 drawings.)	CO2, CO3
3	LLO 3. Draft a complete 2BHK house plan in AutoCAD.	Draw a drawing of a plan of two BHK houses.	CO2, CO3
4	LLO 4. Model four basic 3D geometrical figures using 3D commands.	Draw Four 3D Geometrical Figures.	CO3
5	LLO 5. Develop plan, elevation and 3D views of one residential and one commercial building.	Develop PLAN, ELEVATION and 3D Views of One Residential and One Commercial Building	CO4, CO5
6	LLO 6. Identify the basics and applications of STAAD Pro, ETABS and similar software.	To give the introductory session of advanced software like Staad Pro, Etabs etc.	CO4, CO5

VII. SUGGESTED MICRO PROJECT / ASSIGNMENTS / ACTIVITIES FOR SELF LEARNING / SKILL DEVELOPMENT (SELF LEARNING)

- Basic 2D Practice Sheet for Draw Line, Circle, Arc, Polygon, Rectangle, Ellipse with proper dimensions.
- Room Layout Drawing with doors & windows as per given sizes.
- Take an existing plan and apply Copy, Move, Offset, Mirror, Trim, Extend, Fillet, and Chamfer.
- Create a drawing using minimum 5 layers (walls, doors, windows, furniture, and dimensions) with proper text style and hatch.
- Create blocks of door, window, chair, and table and insert them in a house plan.
- Create 4 basic 3D solids (Box, Cylinder, Cone, and Sphere) and apply render/shade.

Mini projects

- Prepare a complete 2D plan, elevation, section and 3D model of a 2BHK residential building using AutoCAD.

VIII. LIST OF INSTRUMENTS / EQUIPMENT / TRAINER BOARD

1	Computer system -Intel Core I3 Dual with 8GB RAM 1 TB hard disk and Mouse and Key Board
2	Printer and/or Plotter as per printing requirement

IX. LIST OF REFERENCE BOOKS

Sr.No.	Title	Author	Publication
1	AutoCAD Manual	-----	Microsoft Autodesk
2	The beginning AutoCAD 2017	Cheryl R. Shrock, Steve Heather	Autodesk
3	The AutoCAD 2017 Instructor	James Leach	SDC Publication

X. LINK OF LEARNING WEB RESOURCE

1	Authentic AutoCAD version 2010 or Higher can be down loaded from AICTE website
2	Autodesk web site
3	https://nptel.ac.in/courses

XI. SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE

Unit	Unit Title	Aligned COs	Learning Hours	R-Level	U-Level	A-Level	Total Marks
1	Introduction To Civil Engineering Software	CO1	06	3	4	3	10
2	Editing of AutoCAD drawing	CO2	04	2	2	6	10
3	Advanced 2d Commands	CO3	06	3	3	4	10
4	3d Commands of AutoCAD	CO4	08	1	3	6	10
5	Plot Of 2d & 3d Drawings	CO5	06	2	4	4	10
Grand Total			30	11	16	23	50

XII. COs AND POs AND PSOs MAPPING

Course outcome (Cos)	Programme Outcomes (POs)							Programme Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	3	3	2	1	2	3	2	1	2	1
CO2	1	2	2	2	1	1	3	2	3	1
CO3	2	2	1	1	1	2	3	3	2	3

CO4	1	2	2	1	3	2	1	1	2	2
CO5	2	2	3	3	3	2	2	1	3	2
Legends: -3- High 2-Moderate/Medium 1-Slight/Low 0-None										