

GANPAT UNIVERSITY			
FACULTY OF DIPLOMA ENGINEERING			
Programme	Diploma in Chemical Engineering / Petrochemical Technology		
Semester	III	Version	1.0.0.0
Effective from Academic Year	2026-27	Effective for the batch Admitted in	JULY 2025
Course code	1CH3105	Course Name	Chemical Engineering Equipment Drawing

I. TEACHING-LEARNING AND ASSESSMENT SCHEME

Course Type	Course Code	Learning Scheme						Assessment Scheme								Total Marks		
		Actual Contact Hrs./Week			SLH	NLH	Credits	Theory				Practical			Based on SL			
		C L	T L	L L				FA- TH	SA- TH	TOTAL		FA- PR	SA- PR	TOTAL			SLA	
										MAX	MIN			MAX	MIN		MAX	MIN
DSC	1CH4105	0	-	4	2	6	4	-	-	-	-	60	40	100	40	-	-	100

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

Basic knowledge of Engineering Drawing, Fluid Flow from Physics

III. INDUSTRY /EMPLOYER EXPECTED OUTCOMES

This course aims to help the students to connect theoretical knowledge of fluid flow and other basic physics with the practical layout of equipment and their various components, like pipe connections, valves, etc.

IV. COURSE LEARNING OUTCOMES

At the end of the course, students will be able to achieve the following course learning outcomes:

CO1: Identify and label standard engineering symbols for various valves

CO2: Describe the working components and construction of pumps

CO3: Reproduce standard instrumentation symbols for pressure, temperature, flow, and level controllers

CO4: Sketch different pipe fittings and detailed views of different units of the operation equipment

V. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL

Sr. No	PRACTICAL/LABORATORY LEARNING OUTCOME(LLO)	PRACTICAL TITLES	RELEVANT COs
1	LLO 1.1 Identify and draft standard symbols for fluid control devices	Draw various types of valves, such as Globe valve, Gate valve, Diaphragm valve, and non-return valves in a sketch book	CO1
2	LLO 2.1 Illustrate the mechanical structure of fluid prime movers.	Draw sketches of different pumps, such as Centrifugal, reciprocating, and rotary pumps	CO2
3	LLO 3.1 Develop P&ID (Process & Instrumentation) literacy for process control	Draw instrumentation symbols for pressure, temperature, flow, and level parameters	CO3
4	LLO 4.1 Prepare and explain the accurate schematic view of various flanges.	Draw sectional views of pipe fittings and industrial joints	CO4
5	LLO 5.1 Illustrate chemical process equipments, heat/mass transfer units and mechanical operations as per national standard.	Draw symbols of various equipment and devices for heat exchange, mass transfer, and mechanical operations as per national standard IS 696.	CO5

VI. SUGGESTED MICRO PROJECT / ASSIGNMENTS / ACTIVITIES FOR SELF LEARNING / SKILL DEVELOPMENT (SELF LEARNING)**ASSIGNMENT**

- Photograph a pipe fitting or valve in a real-world setting (e.g., campus plumbing or a local workshop) and draw the corresponding engineering symbol and technical sketch
- Utilize reference books to select a problem statement related to troubleshooting real problems in equipment

VII. LIST OF LABORATORY EQUIPMENT / INSTRUMENTS / TOOLS / SOFTWARE REQUIRED

1	A1 Sheet
2	HB grade Clutch Pen Pencil with Eraser
3	3H and 2B Pencil
4	Protractor, Set Square, Roller Scale
5	Compass, notebook for rough work and planning of tasks

VIII LIST OF REFERENCE BOOKS

Sr. No.	Title	Author	Publication
1	Ludwig's Applied Process Design for Chemical and Petrochemical Plant, Volume 1 & 2	A. Kayode Coker	Gulf Professional Publishing
2	Dryden's Outlines of Chemical Technology, 3rd ed.	M. Gopala Rao and Marshall Sittig	East-West Press.
3	Unit Operations of Chemical Engineering 7th ed.	W. L. McCabe & J. C. Smith	McGraw Hill Publication.
4	M. V. Joshi, V. V. Mahajani	Process Equipment Design (3 rd Edition)	Macmillan India Limited, 2000 ISBN:0333924185, 9780333924181

IX LINK OF LEARNING WEB RESOURCE

1	https://chemix.org/
2	https://www.autodesk.com/in/campaigns/autocad-tutorials
3	https://www.youtube.com/watch?v=d2-D8dTrEWM&list=PLLy_2iUCG87CsdbpqK4c7xaEiiBAAKbb7
4	https://www.coursera.org/specializations/design-of-utility-systems-for-industrial-plants

X SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE

Unit	Practical Title	Aligned COs	Learnin g Hours	R- Leve 1	U- Leve 1	A- Leve 1	Total Marks
1	Draw various types of valves, such as Globe valve, Gate valve, Diaphragm valve, and non-return valves in a sketch book	CO1	12	4	4	2	10
2	Draw sketches of different pumps, such as Centrifugal, reciprocating, and rotary pumps	CO2	12	2	4	4	10
3	Draw instrumentation symbols for Pressure, Temp, Flow, and Level parameters	CO3	12	4	4	2	10
4	Draw sectional views of Pipe Fittings and Industrial Joints	CO4	12	2	4	6	12
5	Draw symbols of various equipment and devices for heat exchange, mass transfer, and mechanical operation	CO5	12	2	4	12	18
Grand Total			60	14	20	26	60

XI 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	1	1	2	1	1	1	3	1	2
CO2	3	1	1	2	1	1	1	3	1	2
CO3	3	1	1	2	1	1	1	3	2	2
CO4	2	2	2	3	1	1	2	2	3	3
Legends: - 3- High 2-Moderate/Medium 1-Slight/Low 0-None										