GANPAT UNIVERSITY

FACULTY OF DIPLOMA ENGINEERING

Programme	Diploma in Mechanical/ Mechatronics/Automobile/Petrochemical/Chemical/ Agriculture/Biomedical Engineering				
Semester	I & II		Version	1.0.0.0	
Effective from Academic Year	2025-26		Effective for the batch Admitted in	JULY 2025	
Course code	1ES1105	Course Name	Mechanical Workshop Practices		

I.TEACHING-LEARNING AND ASSESSMENT SCHEME

Course Type	Course Code	Learning Scheme						Assessment Scheme										
		Actual Contact Hrs./Week			SLH	NLH	Credits	Theory				Practical				Based on SL		Total Marks
		CL	TL	LL				FA-TH	SA-TH	TOTAL		FA-PR	SA-PR	TOTAL		SLA		
								MAX	MAX	MAX	MIN	MAX	MAX	MAX	MIN	MAX	MIN	
SEC	1ES1105	-	-	4	2	6	3	-	-	-	-	60	40	100	40	20	8	120

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

Workshop Practice is a basic engineering course. The knowledge of basic shops like wood working, fitting, welding, plumbing and sheet metal shop is essential for technician to perform his/her duties in industries. Students are able to perform various operations using hand tool equipment and machineries in various shops. Working in workshop develops the attitude of group working and safety awareness. This course provides industrial environment in the educational institute

III. INDUSTRY / EMPLOYER EXPECTED OUTCOMES

Use different engineering tools for performing shop floor activities.

IV. COURSE LEARNING OUTCOMES

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

CO1. Use firefighting tools and equipment.
CO2. Prepare job using different tools in fitting shop.
CO3. Perform various operations using carpentry tools.
CO4. Produce simple job using different sheet metal operations.
CO5. Prepare various welding joints.
CO6. Perform various operations using plumbing tools.

V. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL

Sr. No.	Practical/Laboratory Learning Outcome (LLO)	Practical Titles	Relevant COs
1	**LLO 1.1** Use fire extinguisher **LLO 1.2** Follow safety practices	**General Workshop Safety Practices** Demonstration of Fire Extinguisher Operations	CO1
2	**LLO 2.1** Identify different tools used in workshop.	**Workshop Tools** Identify different tools used in workshop.	CO1, CO2 CO3, CO4 CO5, CO6
3	**LLO 3.1** Prepare fitting job using different tools.	**Fitting Practices** Prepare fitting job incorporating operations such as Marking, Punching, Filing, Chamfering, Drilling, Tapping etc as per drawing.	CO2
4	**LLO 4.1** Prepare carpentry job using different tools.	**Carpentry Practices**	CO3

		Prepare carpentry job incorporating operations such as Measuring, Marking, Cutting, Assembly, as per drawing.	
5	**LLO 5.1** Prepare Sheet metal job using different tools.	**Sheet Metal Practices** Prepare sheet metal job incorporating operations such as Cutting, Bending, Edging, End curling, Lancing, Riveting etc. as per drawing.	CO4
6	**LLO 6.1** Prepare various welded joints using different welding processes. **LLO 6.2** Assemble utility jobs using different manufacturing processes.	**Welding Practices** **1.** Prepare lap joint, butt joint using Arc welding as per given drawing. **2.** Prepare utility job (like stool, benches, tables or similar jobs) involving arc welding and artificial wood as per given drawing (in group of 4 to 5 students) Fabrication operation involve measuring, marking, cutting, edge preparation, welding	CO5,CO2
7	**LLO 9.1** Use plumbing operations for preparing plumbing job **LLO 9.2** Identify plumbing tools.	**Plumbing Practices** Prepare pipe fitting job as per given drawing	CO6
8	**LLO 10.1** Collect information about ancient tools for understanding Indian Knowledge.	**Ancient tools** Draw sketches of various ancient tools	CO1, CO2 CO3, CO4 CO5, CO6

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

- Visit the nearer timber merchant. Collect the information on types and appearance of wood being sold by them.
- Visit nearer fabricator. Collect the information on welding electrodes, transformers and accessories being used by them.
- Collect data regarding industrial safety in Manufacturing Industries.

VII. LIST OF INSTRUMENTS / EQUIPMENT / TRAINER BOARD	
1	Fire buckets of standard size, Fire extinguisher A,B and C types
2	Wood Turning Lathe Machine
3	Wood working tools-marking and measuring tools, saws, claw hammer, mallet, chisels, plans, squares, Carpentry Vice
4	Sheet Bending Machine, Sheet Cutting Machine
5	Brazing Equipment
6	Sheet metal hand tools-snip, shears sheet gauge, straight edge, L square, scriber, divider, trammel, punches, pliers, stakes, groovers, limit set
7	Fitting tools-hammers, chisels, files, hacksaw, surface plate, punch, v-block, angle plate, try square, marking block, steel rule, twist drills, reamers, tap set, die set.
8	Plumbing tools- pipe vice, pipe bending equipment, pipe wrenches, dies.
9	Work Benches
10	Bench Drilling machine, Power Saw machine, Bench Grinder Portable Hammer Drill Machine
11	Surface Plate, Angle Plate
12	Vernier height Gauge
13	Pipe Bending Machine, Pipe Vice, Pipe Cutter
14	Bench Vice
15	Welding machine
16	Oxygen and acetylene gas welding and cutting kit with cylinders and regulators, Gas welding hand tools, Arc welding hand tools

VIII. LIST OF REFERENCE BOOKS			
Sr.No.	**Title**	**Author**	**Publication**
1	Workshop Practice	H.S.Bawa	McGraw Hill Education,
2	Textbook of Manufacturing Process (Workshop Tech.)	Gupta, J.K.; R.S. Khurmi,	S. Chand and Co. New Delhi
3	Workshop Practice Manual for Engineering Diploma & ITI Students	R.K Hegde	Sapna Book House, 2012,
4	Introduction to Basic Manufacturing Process & Workshop Technology	R.K Hegde	New Age International, New Delhi;
5	Elements of Workshop Technology	Hajra & Choudhary	Media Promoters and Publishers Mumbai,

IX. LINK OF LEARNING WEB RESOURCE	
1	http://www.weldingtechnology.org
2	http://www.newagepublishers.com/samplechapter/001469.pdf
3	http://www.youtube.com/watch?v=TeBX6cKKHWY
4	http://www.youtube.com/watch?v=QHF0sNHnttw&feature=related
5	http://www.youtube.com/watch?v=Kv1zo9CAxt4&feature=relmfu
6	http://www.piehtoolco.com

X. SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE							
Unit	**Practical Titles**	**Aligned COs**	**Learning Hours**	**R-Level**	**U-Level**	**A-Level**	**Total Marks**
1	General Workshop Safety Practices	CO1	4	1	2	1	04
2	Workshop Tools	CO1, CO2 CO3, CO4, CO5, CO6	4	1	2	1	04
3	Fitting Practices	CO2	10	3	2	5	10
4	Carpentry Practices	CO3	8	2	2	4	8
5	Sheet Metal Practices	CO4	10	2	2	6	10
6	Welding Practices	CO5, CO2	12	3	3	8	14
7	Plumbing Practices	CO6	10	2	2	4	8
8	Ancient tools	CO1, CO2 CO3, CO4, CO5, CO6	2	0	1	1	2
		Grand Total	60	14	16	30	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	1	2	0	1	3	0	2	1	2	3
CO2	1	1	3	3	2	1	1	3	2	1
CO3	3	2	3	2	1	3	2	3	2	1
CO4	2	1	3	2	1	1	2	3	3	2
CO5	3	3	2	3	2	1	2	3	3	1
CO6	1	2	2	1	2	1	3	2	1	2
Legends: - *3- High* *2-Moderate/Medium* *1-Slight/Low* *0-None*										