25ME104: Departmental Workshop (ME)

w. e. f. Academic Year:	**2025-26**
Semester:	**2**
Category of the Course:	**Engineering Science**
Prerequisite:	Zeal to learn the subject
Rationale:	The departmental workshop aims to enhance practical skills and subject knowledge among students. It bridges the gap between theory and real-world applications. The workshop encourages innovation, hands-on learning, and interdisciplinary collaboration. It supports academic growth and industry readiness. Overall, it contributes to the department's goal of academic and professional excellence.

Course Outcomes:

After Completion of the Course, Student will able to:

	Course Outcome (CO)	**RBT Level (Cognitive Domain)**
CO1	Demonstrate safe working practices and proper usage of hand tools and power tools, and develop awareness of Plastic, Glass, and Ceramic Technologies through demonstration.	Understand
CO2	Perform precision fitting operations such as filing, sawing, drilling, and assemble a functional job as per engineering specifications.	Apply
CO3	Apply carpentry techniques by cutting, shaping, and joining wood, and fabricate accurate wooden joints used in structural and furniture applications.	Apply
CO4	Execute tin smithy processes including sheet metal cutting, bending, and fabrication of objects like funnels or trays using appropriate tools.	Apply
CO5	Perform basic arc welding operations including butt and lap joints, ensuring safety and correct electrode handling techniques.	Apply
CO6	Assemble a basic plumbing pipe system using standard fittings and operate a lathe machine to perform turning and drilling operations as part of foundational machine shop skills.	Apply

Teaching and Evaluation Scheme:

Teaching Scheme					**Examination Scheme**				
L	**T**	**P**	**C**	**Hrs/Week**	**IE**	**Theory**	**CIA**	**Practical**	**Total Marks**
-	-	02	01	02	-	-	30	20	50

IE: Internal Evaluation Theory: Theory Exam (End Semester)

CIA: Continuous Internal Assessment Practical: Practical Exam (End Semester)

List of Practical:

Topic	Hrs
Introduction & Safety Demonstration: Introduction to hand tools, power tools, and safety procedures. Demonstration of Plastic, Glass, and Ceramic Technology	04
Fitting Shop: Hands on practice in precision fitting with filing, sawing, drilling, and assembling a functional job.	06
Carpentry Shop: Hands on practice in cutting, shaping, and crafting precise wooden joints.	04
Tin Smithy Shop: Hands on practice in sheet metal cutting, bending, and fabricating a funnel or tray.	06
Welding Shop: Hands on Practice by Performing arc welding for butt and lap joints.	04
Plumbing Shop: Assembling a pipe joint system.	04
Machine Shop: Performing basic lathe operations like turning and drilling.	02
	30

Reference Books:

1. Hajra Choudhury S.K., Hajra Choudhury A.K. and Nirjhar Roy S.K., "Elements of Workshop Technology", Vol. I 2008 and Vol. II 2010, Media promoters and publishers private limited, Mumbai.
2. Rao P.N., "Manufacturing Technology", Vol. I and Vol. II, Tata McGraw Hill House, 2017.
3. Workshop Technology Vol. 1 and 2 by Raghuvanshi B.S. Dhanpat Rai & Sons1998.
4. Workshop Technology by Chapman W.A. J and Arnold E. Viva low priced student edition, 1998.
5. Workshop Practices, H S Bawa, Tata McGraw-Hill,2009.
6. Hand book of glass manufacturers Vol I & II F.V Tooley Ogden Publishing co. New York
7. Modern Glass Practice Samuel R. Scholes CBI Publishing Co. INC
8. Industrial ceramics Singer and Singer Oxford & IBH
9. Elements of ceramics F.H. Norton Longman Higher Education
10. J. A. Brydson, "Plastics Materials", Butterworth- Heinemann - Oxford, 7th Ed., 2001.
11. Irvin. I. Rubin, "Hand Book of Plastic Materials and Technology", Wiley Interscience, NY, 1990.
12. HMT Production Technology, Tata Mc Graw Hill (India), 1992 13. Introduction to Ceramics - W.D Kingery

Course Outcomes Mapping:

CO	Course Outcome (CO)	POs/PSOs Mapped	Cognitive Level (RBT)	Knowledge Category	Lab Sessions (Hrs)
CO1	Demonstrate safe working practices and proper usage of hand tools and power tools, and develop awareness of Plastic,	PO1, PO5, PO6, PO7, PO8, PO9, P10, PO10,	Understand	Conceptual	04

	Glass, and Ceramic Technologies through demonstration.	PSO1			
CO2	Perform precision fitting operations such as filing, sawing, drilling, and assemble a functional job as per engineering specifications.	PO1, PO2, PO3, PO5, PO9, P11, P12, PO10, PSO1	Apply	Procedural	06
CO3	Apply carpentry techniques by cutting, shaping, and joining wood, and fabricate accurate wooden joints used in structural and furniture applications.	PO1, PO2, PO3, PO5, PO9, P11, P12, PSO1	Apply	Procedural	04
CO4	Execute tin smithy processes including sheet metal cutting, bending, and fabrication of objects like funnels or trays using appropriate tools.	PO1, PO2, PO3, PO5, PO9, P11, P12, PSO1	Apply	Procedural	06
CO5	Perform basic arc welding operations including butt and lap joints, ensuring safety and correct electrode handling techniques.	PO1, PO2, PO3, PO5, PO6, P8, PO9, P11, P12, PSO1	Apply	Procedural	04
CO6	Assemble a basic plumbing pipe system using standard fittings and operate a lathe machine to perform turning and drilling operations as part of foundational machine shop skills.	PO1, PO2, PO3, PO4,PO5, PO9, P11, P12, PSO1	Apply	Procedural	06

Mapping of COs with POs & PSOs:

CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3				3	2	2	3	2	2			3	
CO2	3	3	3		3				2		2	2	3	
CO3	3	3	2		3				2		2	3	3	
CO4	3	3	3		3				2		3	2	3	
CO5	3	3	2		3	2		2	2		2	3	3	
CO6	3	3	3	2	3				2		2	2	3	

3: High, 2: Medium, 1: Low