

SCHEME OF COURSE WORK (R-2020)

Course Details:

Course Title :	Manufacturing Technology Lab		
Course Code :	22ME1107	L T P C	0 0 3 1.5
Program :	B.Tech.		
Branch :	Mechanical Engineering		
Semester :	III		
Prerequisites :	Manufacturing Technology		

Course Outcomes (COs): At the end of the course, the student will be able to

CO	Course Outcomes
CO1	design and prepare simple castings
CO2	build welded joints using TIG welding
CO3	build welded joints using MIG welding
CO4	demonstrate various metal forming processes
CO5	demonstrate processing of plastics

Program Outcomes (POs): A graduate of mechanical engineering will be able to

PO1	apply the knowledge of mathematics, science, engineering fundamentals to solve complex mechanical engineering problems
PO2	Attain the capability to identify, formulate and analyses problems related to mechanical engineering
PO3	design solutions for mechanical system components and processes that meet the specified needs with appropriate consideration for public health and safety
PO4	perform analysis, conduct experiments and interpret data by using research methods such as design of experiments to synthesize the information and to provide valid conclusions
PO5	select and apply appropriate techniques from the available resources and current mechanical engineering and software tools
PO6	carry out their professional practice in mechanical engineering by appropriately considering and weighing the issues related to society
PO7	understand the impact of the professional engineering solutions on environmental safety and legal issues
PO8	transform into responsible citizens by resorting to professional ethics and norms of the engineering practice
PO9	function effectively in individual capacity as well as a member in diverse teams and in multidisciplinary streams
P10	communicate fluently with the engineering community and society, and will be able to prepare reports and make presentations effectively
P11	apply knowledge of the engineering and management principles to managing projects and finance in multidisciplinary environments
P12	engage themselves in independent and life-long learning to continuing professional practice in their specialized areas of mechanical engineering

Course Outcome versus Program Outcomes:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1				3					1	2		
CO2				3					1	2		
CO3				3					1	2		
CO4				3					1	2		
CO5				3					1	2		

1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), put -: No correlation

Program Specific Objectives

PSO1	Design, analyze and optimize mechanical systems along with control mechanisms
PSO2	Manufacture mechanical components by selecting effective processing methods and efficient tools
PSO3	Design, analyze and evaluate thermal systems

Course Outcomes Versus Program Specific Outcomes

Cos	PSO1	PSO2	PSO3
CO1		3	
CO2		3	
CO3		3	
CO4		3	
CO5		3	

1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), put -: No correlation

Assessment Methods:	Day to Day evolution, Record Submission
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Teaching-Learning and Evaluation

Week	Topic / Contents	Course Outcomes	Sample questions	Teaching-Learning Strategy	Assessment Method & Schedule
1	Pattern design and making: Single Piece Pattern	CO1	1.How do you make a Single piece pattern? 2. What are the different types of patterns?	Experiment	Day to Day evolution, Record Submission
2	Sand properties testing: Grain Fineness Number, Green Strength and Permeability of molding sand	CO1	1.How do you compare Compression and Shear strength of a Moulding sand? 2. How do you find the grain fineness number for moulding sand?	Experiment	Day to Day evolution, Record Submission

3	Gating Design and pouring time and solidification time calculations of a casting	CO1	1. How to calculate pouring time and solidification time for a single piece pattern?	Experiment	Day to Day evolution, Record Submission
4	Preparation of a butt joint using TIG Welding	CO2	1. What is the procedure for performing TIG welding ? 2. What is the current and voltage used for welding ?	Experiment	Day to Day evolution, Record Submission
5	Preparation of a butt joint using MIG Welding	CO3	1. What is the procedure for performing MIG welding ? 2. What is the use of feeding device in MIG welding?	Experiment	Day to Day evolution, Record Submission
6	Preparation of a lap joint using Spot welding	-	1.What are the various parts of Spot welding machine ? 2.What is the temperature at Spot welding ?	Experiment	Day to Day evolution, Record Submission
7	Internal Exam-I on CO1, CO2, and CO3				
8	Demonstration of molding, melting, pouring and knock out of simple casting	CO1	1.What is the difference between moulding and casting ? 2. What are the various furnaces used for melting?	Demonstration	Day to Day evolution, Record Submission
9	Preparation of blanks using punchdie set	CO4	1. What is meant by blanking? 2. What are the various dies used for blanking?	Experiment	Day to Day evolution, Record Submission
10	Making of holes using punch-die set	CO4	1. What is meant by punching? What 2. are the various dies used for punching?	Experiment	Day to Day evolution, Record Submission
11	Making of articles using deep drawing process	CO4	1. What is meant by optimum clearance? 2. What is the procedure used for making cups?	Experiment	Day to Day evolution, Record Submission
12	Making of bends of pipes at different angles	CO4	1.What is Bend allowance? 2. What are the various dies used for bending?	Experiment	Day to Day evolution, Record Submission
13	Making of a plastic component using injection molding	CO5	1.How do you prepare an elbow by using Injection molding? 2. List out components of spot welding machine.	Experiment	Day to Day evolution, Record Submission

14	Internal Exam-II on CO4 and CO5
15,16	END EXAM