

**SCHEME OF COURSE WORK
(R - 2020)**

Course Details:

Course Title	Engineering Workshop		
Course Code	22ES11EW	L T P C	1 0 4 3
Program	B. Tech.		
Branch	Mechanical Engineering		
Semester	I		

Course Outcomes (Cos):

At the end of the course, the student will be able to

CO	Course Outcomes
CO 1	demonstrate Wood working and Sheet metal working skills
CO 2	demonstrate Fitting trade and House wiring skills
CO 3	demonstrate 3-D Printing and Engraving skills
CO 4	demonstrate preparation of sand casting moulds and manufacturing of plastic components
CO 5	demonstrate lathe operations and make different welded joints
CO 6	demonstrate manufacturing of domestic utility components and assembling/disassembling of automobile components

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 analyse 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	Conduct experiments, perform analysis and interpretation of 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.
PO10	Communicate fluently with the engineering community and society, and will be able to prepare reports and make presentations effectively.

PO11	Apply knowledge of the engineering and management principles to managing projects and finance in multidisciplinary environments.
PO1 2	Engage themselves in independent and life-long learning to continuing professional practice in their specialized areas of mechanical engineering.

Course Outcomes Versus Program Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	3			2	2				1			
CO 2	3			2	2				1			
CO 3	3			2	2				1			
CO 4	3			2	2				1			
CO 5	3			2	2				1			
CO 6	3			2	2				1			

Mapping Levels:

1 – Slight (Low)

2 – Moderate (Medium)

3 – Substantial (High)

Programme Specific Objectives (PSOs):

The students must attain the knowledge and skills to

PSO-1	Design, analyse and optimize mechanical systems along with control mechanisms
PSO-2	Manufacture mechanical components by selecting effective processing methods and efficient tools
PSO-3	Design, analyse evaluate thermal systems

Course Outcomes Vs. Program Specific Outcomes:

COs	PSO1	PSO2	PSO3
CO-1		3	
CO-2		3	
CO-3		3	
CO-4		3	
CO-5		3	
CO-6		3	

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

4: *Blank (No Correlation)*

Teaching and Learning
Evaluation

Week #	Contents	Course Outcome	Sample Questions	Teaching and Learning Strategy	Assessment Method and Schedule
1	Wood Working – I: Making a cross-Half Lap Joint	CO 1	<ul style="list-style-type: none"> Name few carpentry tools ? What are different types in wood? 	Experiment	Evaluation of Job, Observation, Record Submission, Internal - I
2	Wood Working – II: Making a Mortise and Tenon Joint	CO 1	<ul style="list-style-type: none"> State applications of Mortise and Tenon joint. Name various marking tools 	Experiment	Evaluation of Job, Observation, Record Submission, Internal - I
3	Sheet Metal Work	CO 1	<ul style="list-style-type: none"> What is meant by galvanization ? What is the function of a scribe ? 	Experiment	Evaluation of Job, Observation, Record Submission, Internal - I
4	Fitting Job – I : Making a V- Fit	CO 2	<ul style="list-style-type: none"> Name various fitting tools State various types of Files. 	Experiment	Evaluation of Job, Observation, Record Submission, Internal - I
5	Electrical Wiring – I : Parallel and Series wire connections	CO 2	<ul style="list-style-type: none"> What do you mean by parallel connection ? What is series connection ? 	Experiment	Evaluation of Job, Observation, Record Submission, Internal - I
6	3-D Printing	CO 3	<ul style="list-style-type: none"> What is rapid prototyping ? Explain in layman terms, how 3-D printing is carried out. 	Experiment	Evaluation of Job, Observation, Record Submission, Internal - I
7	Backlog and Repetitions				
8	INTERNAL EXAM - 1				Experiment, Viva-voce
9	Foundry: Preparation of green sand mould using single piece pattern	CO 4	<ul style="list-style-type: none"> What is the composition of green sand Why vent holes are driven in the mould 	Experiment	Evaluation of Job, Observation, Record Submission, Internal -II
10	Making of plastic component by Injection Molding	CO 4	<ul style="list-style-type: none"> Explain Injection Molding process Discuss the construction of dies 	Experiment	Evaluation of Job, Observation, Record Submission, Internal -II
11	Welding I: Preparation of a Butt joint using Arc welding	CO 5	<ul style="list-style-type: none"> Discuss about polarity in welding State applications of Butt joint 	Experiment	Evaluation of Job, Observation, Record Submission, Internal -II

12	Welding II: Preparation of lap joint using gas welding	CO 5	<ul style="list-style-type: none"> ●What are different types of flames in gas welding ●State the differences between forehand and backhand welding methods 	Experiment	Evaluation of Job, Observation, Record Submission, Internal -II
13	Lathe operation: Performing facing and turning operations on a cylindrical stock on lathe machine	CO 5	<ul style="list-style-type: none"> ●Name various operations that can be performed on a lathe machine ●What are the important parts n a lathe machine 	Experiment	Evaluation of Job, Observation, Record Submission, Internal -II
14	Assembling and disassembling of Clutch and Carburetor	CO 6	<ul style="list-style-type: none"> ●What is the function of a clutch? ●What is the function of a carburetor ? 	Experiment	Evaluation of Job, Observation, Record Submission, Internal -II
15	Backlog and Repetitions				
16	INTERNAL EXAM - II				Experiment, Viva-voce