SCHEME OF COURSE WORK (R- 2020)

Course Details:

Course Title	Fluid Mechanics and Machinery Lab		
Course Code	22ME1108	**L T P C**	**0 0 3 1.5**
Program:	B Tech		
Specialization:	**Mechanical Engineering**		
Semester	**III**		

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

CO-1	Demonstrate Bernoulli's theorem and calculate the discharge using various flow measuring devices
CO-2	Explain free and forced vortex flows and calculate the force exerted by jet on different vane configurations.
CO-3	Determine major and minor losses in pipes
CO-4	Examine the working and performance of different types of turbines
CO-5	Assess the working and performance of reciprocating and centrifugal pumps

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

PO-1	Apply the knowledge of mathematics, science, engineering fundamentals to solve complex mechanical engineering problems.
PO-2	Attain the capability to identify, formulate and analyse problems related to mechanical engineering.
PO-3	Design solutions for mechanical system components and processes that meet the specified needs with appropriate consideration for public health and safety.
PO-4	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..
PO-5	Select and apply appropriate techniques from the available resources and current mechanical engineering and software tools.
PO-6	Carry out their professional practice in mechanical engineering by appropriately considering and weighing the issues related to society.
PO-7	Understand the impact of the professional engineering solutions on environmental safety and legal issues.
PO-8	Transform into responsible citizens by resorting to professional ethics and norms of the engineering practice.
PO-9	Function effectively in individual capacity as well as a member in diverse teams and in multidisciplinary streams.
PO-10	Communicate fluently with the engineering community and society, and will be able to prepare reports and make presentations effectively.
PO-11	Apply knowledge of the engineering and management principles to managing projects and finance in multidisciplinary environments.
PO-12	Engage themselves in independent and life-long learning to continuing professional practice in their specialized areas of mechanical engineering.

Course Outcome Versus Program Outcomes:

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

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

Program Specific Objectives (PSOs):

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 and evaluate thermal systems

The student must attain the knowledge and skills to

Course Outcome Versus Program Specific Outcomes:

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

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

Assessment Methods:	Record/observation / Viva/ Mid-Test / End Exam

Teaching-Learning and Evaluation

Week	TOPIC / CONTENTS	Course Outcomes	Sample questions	TEACHING-LEARNING STRATEGY	Assessment Method & Schedule
1	Calibration of Venturimeter.	CO 1	What is the coefficient of discharge of Venturimeter at various flow rates.	Experiment	Day to Day evolution, Record Submission
2	Calibration of Orifice meter.	CO 1	Determination of coefficient of discharge for orifice meter.	Experiment	Day to Day evolution, Record Submission
3	Verification of Bernoulli's theorem	CO 1	State and verify Bernoulli's theorem.	Experiment	Day to Day evolution, Record Submission
4	Determination of friction factor for a given pipe line.	CO 3	What is the friction factor for various pipes of different material of same diameter and of different diameters.	Experiment	Day to Day evolution, Record Submission
5	Determination of minor losses in a pipeline	CO 3	What is the loss coefficient at Sudden contraction and at sudden expansion.	Experiment	Day to Day evolution, Record Submission

6	Performance test on reciprocating pump.	CO 5	What is the efficiency of reciprocating pump at various heads.	Experiment	Day to Day evolution, Record Submission
7	Backlog Classes				
8	Backlog Classes				
9	**Mid-Test 1**				
10	Determination of force exerted by fluid jet on different vanes	CO 2	Determine the coefficient of impact, when a jet impinges on different plates.	Experiment	Day to Day evolution, Record Submission
11	Performance test on Pelton wheel.	CO 4	Study the characteristics of Pelton wheel at various loads.	Experiment	Day to Day evolution, Record Submission

12	Performance test on Francis turbine.	CO 4	Study the characteristics of Francis turbine at various loads	Experiment	Day to Day evolution, Record Submission
13	Performance test on single stage centrifugal pump.	CO 5	Determine the overall efficiency of Centrifugal pump at various speeds.	Experiment	Day to Day evolution, Record Submission
14	Calibration of V - Notch	CO 1	Determine the coefficient of discharge for V-notch..	Experiment	Day to Day evolution, Record Submission
15	Performance test on multi stage centrifugal pump.	CO 5	What is the overall efficiency of multi stage Centrifugal pump at various heads.	Experiment	Day to Day evolution, Record Submission
16	Backlog Classes				
17	Backlog Classes				
18	**Mid-Test 2**				
19/ 20	**END EXAM**				