

B. E. MECHANICAL ENGINEERING			
Choice Based Credit System (CBCS) and Outcome Based Education (OBE)			
SEMESTER –V			
FLUID MECHANICS AND MACHINES LAB			
Course Code	18MEL57	CIE Marks	40
Teaching Hours/Week (L:T:P)	0:2:2	SEE Marks	60
Credits	02	Exam Hours	03
Course Learning Objectives:			
- This course will provide a basic understanding of flow measurements using various types of flow measuring devices, calibration and losses associated with these devices. - Energy conversion principles, analysis and understanding of hydraulic turbines and pumps will be discussed. Application of these concepts for these machines will be demonstrated. Performance analysis will be carried out using characteristic curves.			
Sl. No.	Experiments		
	PART A		
1	Lab layout, calibration of instruments and standards to be discussed		
2	Determination of coefficient of friction of flow in a pipe.		
3	Determination of minor losses in flow through pipes.		
4	Application of momentum equation for determination of coefficient of impact of jets on flat and curved blades		
5	Calibration of flow measuring devices.		
	PART B		
6	Performance on hydraulic Turbines a. Pelton wheel b. Francis Turbine c. Kaplan Turbines		
7	Performance hydraulic Pumps d. Single stage and Multi stage centrifugal pumps e. Reciprocating pump.		
8	Performance test on a two stage Reciprocating Air Compressor.		
9	Performance test on an Air Blower.		
	PART C (OPTIONAL)		
10	Visit to Hydraulic Power station/ Municipal Water Pump House and Case Studies		
11	Demonstration of cut section models of Hydraulic turbines and Pumps.		
Course Outcomes: At the end of the course, the student will be able to:			
CO1: Perform experiments to determine the coefficient of discharge of flow measuring devices.			
CO2: Conduct experiments on hydraulic turbines and pumps to draw characteristics.			
CO3: Test basic performance parameters of hydraulic turbines and pumps and execute the knowledge in real life situations.			
CO4: Determine the energy flow pattern through the hydraulic turbines and pumps.			
CO5: Exhibit his competency towards preventive maintenance of hydraulic machines.			
Conduct of Practical Examination:			
1. All laboratory experiments are to be included for practical examination.			
2. Breakup of marks and the instructions printed on the cover page of answer script to be strictly adhered by the examiners.			
3. Students can pick one experiment from the questions lot prepared by the examiners.			
4. Change of experiment is allowed only once and 15% Marks allotted to the procedure part to be made zero.			
Scheme of Examination:			
ONE question from part A: 30 Marks			
ONE question from part B: 50 Marks			
Viva –Voice : 20 Marks			
Total : 100 Marks			