

<b>B. E. MECHANICAL ENGINEERING</b>			
<b>Choice Based Credit System (CBCS) and Outcome Based Education (OBE)</b>			
<b>SEMESTER –V</b>			
<b>ENERGY CONVERSION LABORATORY</b>			
Course Code	<b>18MEL58</b>	CIE Marks	40
Teaching Hours/Week (L:T:P)	0:2:2	SEE Marks	60
Credits	02	Exam Hours	03
<b>Course Learning Objectives:</b>			
<ul style="list-style-type: none"> <li>• This course will provide a basic understanding of fuel properties and its measurements using various types of measuring devices</li> <li>• Energy conversion principles, analysis and understanding of I C Engines will be discussed. Application of these concepts for these machines will be demonstrated. Performance analysis will be carried out using characteristic curves.</li> <li>• Exhaust emissions of I C Engines will be measured and compared with the standards.</li> </ul>			
<b>Sl. No.</b>	<b>Experiments</b>		
	<b>PART A</b>		
1	Lab layout, calibration of instruments and standards to be discussed		
2	Determination of Flash point and Fire point of lubricating oil using Abel Pensky and Marten's (closed) / Cleveland's (Open Cup) Apparatus.		
3	Determination of Calorific value of solid, liquid and gaseous fuels.		
4	Determination of Viscosity of lubricating oil using Redwoods, Saybolt and Torsion Viscometers.		
5	Valve Timing/port opening diagram of an I.C. Engine.		
	<b>PART B</b>		
6	Performance Tests on I.C. Engines, Calculations of IP, BP, Thermal efficiency, Volumetric efficiency, Mechanical efficiency, SFC, FP, A:F Ratio, heat balance sheet for <ol style="list-style-type: none"> <li>a. Four stroke Diesel Engine</li> <li>b. Four stroke Petrol Engine</li> <li>c. Multi Cylinder Diesel/Petrol Engine, (Morse test)</li> <li>d. Two stroke Petrol Engine</li> </ol> Variable Compression Ratio I.C. Engine.		
7	Measurements of Exhaust Emissions of Petrol engine.		
8	Measurements of Exhaust Emissions of Diesel engine.		
	<b>PART C (OPTIONAL)</b>		
9	Visit to Automobile Industry/service stations.		
10	Demonstration of $p\theta$ , $pV$ plots using Computerized IC engine test rig		
<b>Course Outcomes:</b> At the end of the course, the student will be able to:			
CO1: Perform experiments to determine the properties of fuels and oils.			
CO2: Conduct experiments on engines and draw characteristics.			
CO3: Test basic performance parameters of I.C. Engine and implement the knowledge in industry.			
CO4: Identify exhaust emission, factors affecting them and exhibit his competency towards preventive maintenance of IC engines.			
<b>Scheme of Examination:</b>			
	ONE question from part A:	30	Marks
	ONE question from part B:	50	Marks
	Viva –Voice	:	20 Marks
	Total	:	100 Marks