



**Department of Mechanical Engineering**

**Lesson Plan & Work-Done Diary for AY: 2024-25, Even Semester**

Course with Code: Applied Thermodynamics [BME401]				Faculty: Mr. Raghu		Semester & Section: 4 <sup>th</sup> Sem
Class No.	Date Planned (DD/MM)	Topics to be covered	TLP Planned	Date of Conduction (DD/MM)	Topics Covered	Remarks (if any deviation)
1		Bridge class-1	PPT			
2		Bridge class-2	PPT			
3		<b>Module-1: Air standard cycles:</b> Introduction, Carnot, Otto cycle	Chalk & Talk PPT			
4		Diesel, Dual cycles	Chalk & Talk PPT			
5		Stirling cycles	Chalk & Talk PPT			
6		Comparison of Otto and Diesel cycles.	PPT			
7		Numerical problems on Otto cycle	Chalk & Talk			
8		Numerical problems on diesel cycle	Chalk & Talk			
9		Numerical problems on dual cycle	Chalk & Talk			

10		<b>I.C. Engines:</b> Classification of IC engines, Combustion of SI engine and CI engine, Detonation and factors affecting detonation, Performance analysis of I.C Engines	PPT& Video			
11		Heat balance, Morse test IC Engine fuels, Ratings and Alternate Fuels,	Chalk & Talk PPT			
12		Lab visit	Lab visit			
13		Numerical problems	Chalk & Talk			
14		<b>Module-2: Gas power Cycles:</b> Gas turbine (Brayton) cycle; description and analysis, Regenerative gas turbine cycle,	Chalk & Talk PPT			
15		Reheat gas turbine cycle, Inter-cooling and reheating in gas turbine cycles	Chalk & Talk PPT			
16		Combined Brayton cycle, Quiz-1	Chalk & Talk PPT, SRS			
17		Introduction to Jet Propulsion cycles	Chalk & Talk PPT			
18		Ram jet, Turbojet,	PPT			
19		Numerical problems	Chalk & Talk			
20		Numerical problems	Chalk & Talk			
21		<b>Module-3: Vapour power cycles:</b> Carnot vapour power cycle, drawbacks as a reference	Chalk & Talk			

		cycle				
22		Simple Rankine cycle; description, T-S diagram, analysis for performance	Chalk & Talk PPT			
23		Comparison of Carnot and Rankine cycles, Effects of pressure and temperature on Rankine cycle performance	PPT & Video			
24		Actual vapour power cycles. Ideal and practical regenerative Rankine cycles	Chalk & Talk PPT			
25		Open and closed feed water heaters.	Chalk & Talk PPT			
26		Reheat Rankine cycle. Characteristics of an Ideal working fluid in vapour power cycles	Chalk & Talk PPT			
27		Numerical problems	Chalk & Talk PPT			
28		Numerical problems	Chalk & Talk PPT			
29		Numerical problems	Chalk & Talk			
30		<b>Module-4: Refrigeration Cycles:</b> Vapour compression refrigeration system; description, analysis, refrigerating effect. COP, Refrigerants and their desirable properties	Chalk & Talk			

31	Refrigerants. Air cycle refrigeration; reversed Carnot cycle	Chalk & Talk			
32	Reversed Brayton cycle, vapour absorption refrigeration system.	Chalk & Talk PPT			
33	Lab visit	Chalk & Talk PPT			
34	Numerical problems	Chalk & Talk PPT			
35	Psychrometric properties of Air, Psychrometric Chart	Lab visit			
36	Analyzing Air-conditioning Processes; Heating, Cooling, Dehumidification and Humidification	Chalk & Talk			
37	Evaporative Cooling. Adiabatic mixing of two moist air streams, cooling towers	PPT & Video			
38	Numerical problems	Chalk & Talk PPT			
39	Numerical problems, Quiz-2	Chalk & Talk PPT, SRS			
40	<b>Module-5: Reciprocating compressors:</b> Operation of a single stage reciprocating compressors. Work input through p-v diagram and steady state steady flow analysis	Chalk & Talk			

41		Effect of Clearance and Volumetric efficiency. Adiabatic, Isothermal and Mechanical efficiencies	Chalk & Talk			
42		Multi-stage compressor, saving in work, Optimum intermediate pressure, Inter-cooling, Minimum work for compression	Chalk & Talk PPT			
43		Numerical problems, Quiz-3	Chalk & Talk PPT			
44		Numerical problems	Chalk & Talk PPT			
45		Flow of steam through nozzles, Shape of nozzles, Effect of friction, Critical pressure ratio, Supersaturated flow	Chalk & Talk, SRS			
46		Numerical problems	Chalk & Talk			

	<b>Activity</b>	<b>Planned</b>	<b>Actual</b>	<b>Remarks</b>
1	Theory Classes	44		
2	Demonstrations & Lab Visit/ Experiment conduction	2		
3	Assignments/ Quizzes/ reports	2+3		
4	Tutorials/ Extra classes	-		
5	Internal Assessments	3		
6	ICT based Teaching. (% of usage in Curriculum)	50 to 60%		
<b>Planning</b>			<b>Execution</b>	
<b>Faculty Signature:</b>			<b>Faculty Signature:</b>	
<b>HoD Signature:</b>			<b>HoD Signature:</b>	