IIPM SCHOOL OF ENGINEERIN AND TECHNOLOGY
LESSON PLAN: SUMMER 2022
THERMAL ENGINEERING-II

Branch : Mechanical **Semester: 4th**
Duration : 60
Faculty name : Saritprava Sahoo
Objective : Modern society needs lots of applications of thermodynamics, which deals with energy possessed by hot vapors, its production and its application in different fields.
Learning Outcome : Understanding effectiveness of

- ✓ *The power developed in I.C engine and efficiency.*
- ✓ *The principle, performance and application of air compressor.*
- ✓ *Thermodynamic properties of steam using steam tables & mollier chart.*
- ✓ *The working of various steam generators i.e. Boilers.*
- ✓ *The vapor power cycles and computing work done & efficiencies thereof.*

Sl. No	Chapter	Proposed Week for Teaching	Period No.	Subject Name	Important Teaching Points	Content Source
1	I	1st	1	Performance of I.C engine	➢ Define mechanical efficiency,	Thermal engg R .S. khrumi
2			2		➢ Indicated thermal efficiency,	
3			3		➢ Relative Efficiency, ➢ brake thermal efficiency	
4			4		➢ overall efficiency	
5		2nd	1		➢ Mean effective pressure &specific fuel consumption.	
6			2		➢ Define air-fuel ratio & calorific value of fuel.	
7			3		➢ Work out problems to determine efficiencies &	
8			4		➢ Specific Fuel Consumption.	
9		3rd	1		➢ Solved Simple Numerical	
10			2		➢ ASSIGNMENT	
11			3		➢ CLASS TEST	
12	II		4	Air Compressor	➢ Explain functions of compressor & industrial use of compressor air	Thermal engg R .S. khrumi
13		4th	1		➢ Classify air compressor & principle of operation.	
14			2		➢ Describe the parts and working principle of reciprocating Air compressor.	
15			3		➢ Explain the terminology of reciprocating compressor such as bore, stroke,	
16			4		➢ pressure ratio free air delivered &Volumetric efficiency.	
17		5th	1		➢ Derive the work done of single stage with and without Clearance.	
18			2		➢ Derive the work done two stage compressor with and without Clearance.	
19			3		➢ Solve simple problems (without clearance only)	
20			4		➢ ASSIGNMENT	

21		6th	1		➢ CLASS TEST	
22	**III**		2	Properties of Steam	➢ Difference between gas & vapours.	Thermal engg R .S. khrumi
23			3		➢ Formation of steam.	
24			4		➢ Representation on P-V, T-S, H-S, & T-H diagram.	
25			4		➢ Definition & Properties of Steam.	
26		4th	1		➢ Use of steam table & mollier chart for finding unknown properties.	
27			2		➢ Non flow & flow process of vapour.	
28			3		➢ P-V, T-S & H-S, diagram.	
29			4		➢ Determine the changes in properties	
30		5th	1		➢ Solve simple numerical.	
31			2		➢ ASSIGNMENT	
32			3		➢ CLASS TEST	
33	**IV**		4	Steam Generator	➢ Classification & types of Boiler.	Thermal engg R .S. khrumi
34		6th	1		➢ Important terms for Boiler.	
35			2		➢ Comparison between fire tube & Water tube Boiler.	
36			3		➢ Description & working of common boilers (Cochran, Lancashire,	
37			4		➢ Description & working of common boilers Babcock &Wilcox Boiler)	
38		7th	1		➢ Boiler Draught (Forced, induced & balanced)	
39			2		➢ Boiler mountings & accessories.	
40			3		➢ ASSIGNMENT	
41			4		➢ CLASS TEST	
42	**V**	8th	1	Steam Power Cycles	➢ Carnot cycle with vapour.	Thermal engg R .S. khrumi
43			2		➢ Derive work & efficiency of the cycle.	
44			3		➢ Rankine cycle.	
45			4		➢ Representation in P-V, T-S & h-s diagram.	
46		9th	1		➢ Derive Work & Efficiency.	
47			2		➢ Effect of Various end conditions in Rankine cycle.	
48						
49			3		➢ Reheat cycle & regenerative Cycle.	
50			4		➢ Solve simple numerical on Carnot vapour Cycle & Rankine Cycle.	
51		10th	1		➢ ASSIGNMENT	
52			2		➢ CLASS TEST	
53	**VI**		3	Heat Transfer	➢ Modes of Heat Transfer (Conduction, Convection, Radiation).	Thermal engg R .S. khrumi
54			4		➢ Fourier law of heat conduction and thermal conductivity (k).	
55		11th	1		➢ Newton's laws of cooling.	
56			2		➢ Radiation heat transfer (Stefan, Boltzmann &	
57			3		➢ Kirchhoff's law) only statement,no derivation & no numerical problem.	
58			4		➢ 6.5 Black body Radiation, Definition of Emissivity,	
59		12th	1		➢ absorptivity, & transmissibility.	

60			2		➢ Solved Simple Numerical	Thermal engg R .S. khrumi
61			3		➢ ASSIGNMENT	
62			4		➢ CLASS TEST	

Text book suggested :

➢ Thermal Engineering.	R.S. Khurmi	S.Chand
➢ Thermal Engineering .	A.R.Basu	Dhanpat Rai
➢ Thermal Engineering.	A.S. Sarao	Satya Prakash

Signature of Faculty Member HOD Principal/ Director