LESSON PLAN

Discipline: **MECHANICAL ENGG.**	Semester: 4^{th}	Name of the Teaching Faculty: **BHABANI SANKAR SAHOO**
Subject: **THERMAL ENGG.-II (TH 4)**	No. of days per week class allotted: **04**	Semester From date: **04.02.2025** To Date: **17.05.2025** No. of Weeks: **15**
Week	Class Day	Theory/Practical Topics
1ST	1ST	1. Performance of I.C engine, Mean effective pressure
	2ND	Define mechanical efficiency
	3RD	Indicated thermal efficiency, Relative Efficiency
	4TH	Brake thermal efficiency, simple problem
2ND	1ST	Overall efficiency Mean effective pressure, simple problem
	2ND	specific fuel consumption
	3RD	Define air-fuel ratio & calorific value of fuel
	4TH	Work out problems to determine efficiencies & specific fuel consumption.
3RD	1ST	2.Air Compressor 2.1 Explain functions of compressor & industrial use of compressor air
	2ND	2.2 Classify air compressor & principle of operation
	3RD	2.3 Describe the parts and working principle of reciprocating Air compressor
	4TH	2.4 Explain the terminology of reciprocating compressor such as bore, stroke, pressure ratio free air delivered &Volumetric efficiency
4TH	1ST	2.5 Derive the work done of single stage compressor without clearance
	2ND	Derive the work done of single stage compressor with clearance
	3RD	Solve simple problems
	4TH	Derive the work done of two stage compressor without clearance
5TH	1ST	Solve simple problems
	2ND	Derive the work done of two stage compressor with clearance
	3RD	Solve simple problems
	4TH	Solve simple problems (without clearance only)
6TH	1ST	3. Properties of Steam 3.1 Difference between gas &vapours
	2ND	3.2 Formation of steam
	3RD	3.3 Representation on P-V, T-S, H-S, & T-H diagram.
	4TH	3.4 Definition & Properties of Steam.
7TH	1ST	3.4 Definition & Properties of Steam.
	2ND	3.4 Definition & Properties of Steam.
	3RD	Solve simple problems
	4TH	3.5 Use of steam table & mollier chart for finding unknown properties.
8TH	1ST	3.6 Non flow & flow process of vapour.
	2ND	3.7 P-V, T-S & H-S, diagram.
	3RD	3.8 Determine the changes in properties.
	4TH	Solve simple numerical.
9TH	1ST	4. Steam Generator 4.1 Classification & types of Boiler
	2ND	4.2 Important terms for Boiler.
	3RD	4.3 Comparison between fire tube & Water tube Boiler.
	4TH	4.4 Description & working of common boilers of Cochran,
10TH	1ST	4.4 Description & working of common boilers of Lancashire
	2ND	4.4 Description & working of common boilers of Babcock & Wilcox Boiler

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	3RD	4.5 Boiler Draught (Forced, induced & balanced)
	4TH	4.5 Boiler Draught (Forced, induced & balanced)
11TH	1ST	4.6 Boiler mountings
	2ND	4.6 Boiler mountings
	3RD	4.6 Boiler accessories.
	4TH	4.6 Boiler accessories.
12TH	1ST	5. Steam Power Cycles
	2ND	5.1 Carnot cycle with vapour. 5.2 Derive work & efficiency of the cycle.
	3RD	Solve simple problems
	4TH	5.3 Rankine cycle. 5.3.1 Representation in P-V, T-S & h-s diagram. 5.3.2 Derive Work & Efficiency
13TH	1ST	5.3.3 Effect of Various end conditions in Rankine cycle. Solve simple problems
	2ND	5.3.4 Reheat cycle
	3RD	Regenerative Cycle.
	4TH	Solve simple problems
14TH	1ST	6. Heat Transfer 6.1 Modes of Heat Transfer (Conduction, Convection, Radiation).
	2ND	6.2 Fourier law of heat conduction
	3RD	Thermal conductivity (k).
	4TH	6.3 Newton's laws of cooling.
15TH	1ST	6.4 Radiation heat transfer (Stefan, Boltzmann & Kirchhoff's law) only statement, no derivation & no numerical problem
	2ND	6.4 Radiation heat transfer (Stefan, Boltzmann & Kirchhoff's law) only statement, no derivation & no numerical problem
	3RD	6.5 Black body Radiation,
	4TH	Definition of Emissivity, absorptivity,& transmissibility.

LearningResouces:

01. Thermal Engineering by M M Rathore, McGraw Hill Education
02. A text book of Thermal Engg. by R S Khurmi and J K Gupta, S Chand Publisher
03. Steam Tables by K K Ramalingam, Scitech Publication

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