

**NM INSTITUTE OF ENGINEERING & TECHNOLOGY
BHUBANESWAR**

Mechanical Engineering Department



Education for a World Stage

**LESSON PLAN
Session 2022-2023**

Semester: 4TH

Subject: THERMAL ENGINEERING-II

Faculty Name: SANGRAM BEHERA

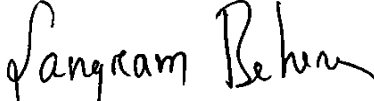
Subject: TE-II

No of Days/per week class allotted: 4

Semester from date: 14/02/2023 to date: 23/05/2023

No. of Weeks: 15

Week	Class Day	Theory topics
1	1	Introduction to I.C engine and its Performance.
	2	Define mechanical efficiency
	3	Indicated thermal efficiency
	4	Relative Efficiency
2	1	Brake thermal efficiency & overall efficiency.
	2	Mean effective pressure & specific fuel consumption.
	3	Define air-fuel ratio & calorific value of fuel.
	4	Work out problems to determine efficiencies & specific fuel consumption.
3	1	Introduction to Air Compressors.
	2	Explain functions of Air compressors.
	3	Explain industrial use of compressor air.
	4	Classify air compressor.
4	1	Explain principle of operation of Air compressors.
	2	Describe the parts of reciprocating Air compressor.
	3	Describe working principle of reciprocating Air compressor.
	4	Explain the terminology of reciprocating compressor.
5	1	bore, stroke, pressure ratio free air delivered & Volumetric efficiency
	2	Derive the work done of single stage Air compressor with and without clearance.
	3	Derive the work done of two stage Air compressor with and without clearance.
	4	Solve simple problems of Air compressor (without clearance only).
6	1	Introduction to Properties of Steam.
	2	Difference between gas & vapours.
	3	Explain about Formation of steam.
	4	Representation on P-V diagram with explanation.
7	1	Representation on T-S, with explanation.
	2	Representation on H-S, with explanation.
	3	Representation on T-H diagram with explanation.
	4	Definition & Properties of Steam.


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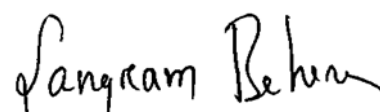
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8	1	Use of steam table & mollier chart for finding unknown properties.
	2	Non flow & flow process of vapour.
	3	P-V, T-S & H-S, diagram.
	4	Determine the changes in properties & solve simple numerical.
9	1	Introduction to Steam Generators.
	2	Classification & types of Boiler.
	3	Important terms for Boiler as mountings
	4	Important terms for Boiler as accessories.
10	1	Comparison between fire tube & Water tube Boiler
	2	Explain about Fire tube Boiler.
	3	Explain about Water tube Boiler.
	4	Description & working of Cochran boiler.
11	1	Description & working of Lancashire boiler,
	2	Description & working of Babcock & Wilcox Boiler
	3	Boiler Draught (Forced, induced & balanced)
	4	Numerical solving of steam generators.
12	1	Introduction to Steam Power Cycles.
	2	Carnot cycle with vapour.
	3	Derive work & efficiency of the cycle.
	4	Introduction to Rankine cycle.
13	1	Representation in P-V, T-S & h-s diagram of Rankine cycle.
	2	Derive Work & Efficiency of Rankine cycle.
	3	Effect of Various end conditions in Rankine cycle.
	4	Reheat cycle & regenerative Cycle.
14	1	Solve simple numerical on Carnot vapour Cycle & Rankine Cycle.
	2	Introduction to Heat Transfer.
	3	Explain about Modes of Heat Transfer: Conduction,
	4	Explain about Convection.
15	1	Explain about Radiation & Newton's laws of cooling
	2	Fourier law of heat conduction and thermal conductivity (k).
	3	Radiation heat transfer (Stefan, Boltzmann & Kirchoff's law) only statement, no derivation & no numerical problem
	4	Black body Radiation, Definition of Emissivity, absorptivity, & transmissibility.


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