

# LESSON PLAN

DEPARTMENT OF MECHANICAL ENGINEERING, ITT, CHOUDWAR

SUBJECT:THEORY 4 -THERMAL ENGINEERING-II

Periods:2 class days(4 hrs) per week SEMESTER:4<sup>th</sup>

NAME OF FACULTY:SANJAYA KUMAR NAYAK, LECT(MECH) No. of weeks: 15

Week	Class Day	Theory / Practical Topics
1st	1 <sup>st</sup>	<b>Performance of I.C engine</b> 1.1 Define mechanical efficiency, Indicated thermal efficiency,
	2 <sup>nd</sup>	Relative Efficiency, brake thermal efficiency overall efficiency Mean effective pressure & specific fuel consumption.
2 <sup>nd</sup>	1 <sup>st</sup>	Define air-fuel ratio & calorific value of fuel.
	2 <sup>nd</sup>	Work out problems to determine efficiencies & specific fuel consumption.
3 <sup>rd</sup>	1 <sup>st</sup>	<b>Air Compressor</b> 2.1 Explain functions of compressor & industrial use of compressor air
	2 <sup>nd</sup>	2.2 Classify air compressor & principle of operation.
4 <sup>th</sup>	1 <sup>st</sup>	Describe the parts and working principle of reciprocating Air compressor
	2 <sup>nd</sup>	Explain the terminology of reciprocating compressor such as bore, stroke, pressure ratio free air delivered & Volumetric efficiency.
5 <sup>th</sup>	1 <sup>st</sup>	Derive the work done of single stage & two stage compressor with and without clearance.
	2 <sup>nd</sup>	Solve simple problems (without clearance only)
6th	1 <sup>st</sup>	<b>Properties of Steam</b> 3.1 Difference between gas & vapours.
	2 <sup>nd</sup>	3.2 Formation of steam., 3.3 Representation on P-V, T-S, H-S, & T-H diagram.
7th	1 <sup>st</sup>	3.4 Definition & Properties of Steam. 3.5 Use of steam table & mollier chart for finding unknown properties.
	2 <sup>nd</sup>	Non flow & flow process of vapour., 3.7 P-V, T-S & H-S, diagram.
8th	1 <sup>st</sup>	3.8 Determine the changes in properties & solve simple numerical.
	2 <sup>nd</sup>	<b>Steam Generator</b> 4.1 Classification & types of Boiler.
9th	1 <sup>st</sup>	4.2 Important terms for Boiler.
	2 <sup>nd</sup>	Comparison between fire tube & Water tube Boiler.
10th	1 <sup>st</sup>	Description & working of common boilers (Cochran, Lancashire, Babcock & Wilcox Boiler)
	2 <sup>nd</sup>	Boiler Draught (Forced, induced & balanced)
11th	1 <sup>st</sup>	Boiler mountings & accessories.
	2 <sup>nd</sup>	<b>Steam Power Cycles</b> 5.1 Carnot cycle with vapour.
12th	1 <sup>st</sup>	5.2 Derive work & efficiency of the cycle, 5.3 Rankine cycle. 5.3.1 Representation in P-V, T-S & h-s diagram.
	2 <sup>nd</sup>	5.3.2 Derive Work & Efficiency., 5.3.3 Effect of Various end conditions in Rankine cycle., 5.3.4 Reheat cycle & regenerative Cycle.
13th	1 <sup>st</sup>	Solve simple numerical on Carnot vapour Cycle & Rankine Cycle.
	2 <sup>nd</sup>	<b>Heat Transfer</b> 6.1 Modes of Heat Transfer (Conduction, Convection, Radiation).
14th	1 <sup>st</sup>	6.2 Fourier law of heat conduction and thermal conductivity (k).
	2 <sup>nd</sup>	6.3 Newton's laws of cooling
15th	1 <sup>st</sup>	6.4 Radiation heat transfer (Stefan, Boltzmann & Kirchhoff's law) only statement, no derivation & no numerical problem.
	2 <sup>nd</sup>	6.5 Black body Radiation, Definition of Emissivity, absorptivity, & transmissibility

Sign. of Faculty:

