DEPARTMENT OF MECHANICAL ENGINEERING

LESSION PLAN

Discipline:- **MECHANICAL**	Class:3rd Sem Mech Engg **Session: 2025-26**	Name Of Faculty:- **Biswajit Mishra**
Subject:- **Thermal Engg-I (Sub code- ME PC209)**	Allotted Classes/week -3	No Of Weeks:-**15** Class start : 14/07/2025 Class End:- 15/11/2025
No. of week	**No. of classes**	**Topic to be taught**
1st	1st	**UNIT-I** **Introduction to Thermodynamics**: Thermodynamic Systems
	2nd	Thermodynamic properties of a system, Units
	3rd	Thermodynamic processes, path, cycle, state, path & point function
2nd	1st	Thermodynamic Equilibrium; Laws of thermodynamics
	2nd	**Sources of Energy**: Brief description of energy Sources
	3rd	Classification of energy sources
3rd	1st	Solar Energy: Flat plate and concentrating collectors
	2nd	Solar Water Heater, Photovoltaic Cell, Solar Distillation
	3rd	Wind Energy; Tidal Energy; Ocean Thermal Energy; Geothermal Energy
4th	1st	Biogas, Biomass, Biodiesel; Hydraulic Energy, Nuclear Energy; Fuel cell.
	2nd	**UNIT-II** **Internal Combustion Engines:** **Air** standard analysis, Carnot, Otto, Diesel cycles introduction
	3rd	IC & EC engines, classification of IC engines
5th	1st	Parts of IC engine: piston, cylinders, valves, crank & connecting rod
	2nd	Flywheel, crank case, engine nomenclature
	3rd	Working of 2 & 4 stroke engines
6th	1st	Working of SI & CI engines
	2nd	Comparison of SI-CI engines, 2-stroke-vs- 4 stroke engines
	3rd	Valve & port timing diagram of 2-stroke & 4-stroke engines
7th	1st	Jet engine: Introduction (Beyond syllabus)
	2nd	**UNIT-III- I.C. Engine Systems:** Fuel system of Petrol engines, carburretors
	3rd	Fuel system of Diesel engines; injectors (types) and fuel pumps
8th	1st	Cooling system: air & water cooling system (with comparison)
	2nd	Ignition systems – Battery coil ignition and magneto ignition
	3rd	Types of lubricating systems used in I.C. engines
9th	1st	Types of governing of I.C. engines, hit and miss & quantitative method
	2nd	combination methods of governing; their applications
	3rd	Objective of super charging
10th	1st	Quiz test-I, Prev year QA discussion
	2nd	**UNIT-IV - Performance of I.C. Engines**: Brake power; Indicated power; Frictional power
	3rd	Simple numericals
11th	1st	Brake and Indicated mean effective pressures; Brake and Indicated

		thermal efficiencies
	2nd	Simple numericals
	3rd	Mechanical efficiency;Relative efficiency, numericals
12th	1st	Performance test; Morse test, numericals
	2nd	Heat balance sheet
	3rd	Methods of determination of B,P., I.P. and F.P
	1st	Numericals on performance
13th	2nd	**Unit-V: Air Compressors**: Functions of air compressor; Uses of compressed air; Types of air compressors
	3rd	Single stage reciprocating air compressor with p-v diagram
	1st	Multi stage compressors – Advantages over single stage compressors
14th	2nd	Rotary compressors: Centrifugal , axial flow and vane type compressors
	3rd	Introduction to refrigeration, C.O.P, Refrigerants, air refrigeration system
	1st	Simple Vapour Compression refrigeration system
15th	2nd	Air conditioning systems: comfort & industrial AC system, window AC
	3rd	Summer, winter & year round AC systems
		Quiz test, Prev year QA
		Prev Year QA

11/07/2025

Sign of Faculty

11/7/25

Sign of H.O.D

HOD
MECHANICAL ENGG. DEPT.
SSE,Dhenkanal

11/07/25

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