LESSON PLAN

SUB: TE-I

BRANCH:- MECHANICAL ENGG.

SEMESTER: 3rd
NAME OF FACULTY: ER. Sagar kumar behera

GOVERNMENT POLYTECHNIC, BHADRAK
SESSION:2025-26

Hod ,Mechanical

Academic Co-ordinator
Academic Co-ordinator

Principal
Govt. Polytechnic, Bhadrak

Discipline: MECHANICAL	Semester:3rd	Name of the Teaching Faculty Sagar kumar behera Lecturer (Stage-II),Mechanical Engineering
Subject: TE-I	No. of days/per week class allotted: 3	Semester From date: 14/07/2025 To date:15-11-25 No of weeks: 15
Week	Class Day	Theory Topics:
1st	1st	Introduction to Thermodynamics: Systems (Closed, Open, Isolated)
	2nd	Thermodynamic Properties: Pressure, Volume, Temperature, Entropy, Enthalpy, Internal Energy & Units
	3rd	Intensive and Extensive Properties; Thermodynamic Processes, Path, Cycle, State, Functions
2nd	1st	Thermodynamic Equilibrium, Quasi-static Process; Laws of Thermodynamics (Statements only)
	2nd	Sources of Energy: Classification (Renewable, Non-Renewable), Fossil Fuels (CNG & LPG)
	3rd	Solar Energy: Flat Plate & Concentrating Collectors, Applications (Solar Water Heater)
3rd	1st	Solar Energy: Photovoltaic Cell, Solar Distillation; Wind Energy
	2nd	Tidal Energy, Ocean Thermal Energy, Geothermal Energy
	3rd	Biogas, Biomass, Bio-diesel; Hydraulic Energy, Nuclear Energy; Fuel Cell
4th	1st	Internal Combustion Engines: Air Standard Cycle Assumptions, Carnot Cycle (P-V, T-S)
	2nd	Otto Cycle (P-V, T-S), Diesel Cycle (P-V, T-S)
	3rd	Internal vs. External Combustion Engines; Advantages of I.C. Engines, Classification of I.C. Engines
5th	1st	I.C. Engine Components: Neat Sketch, Function & Material of Cylinder, Crank Case, Crank Pin, Crank
	2nd	I.C. Engine Components: Crank Shaft, Connecting Rod, Wrist Pin, Piston, Cooling Fins, Cylinder Heads
	3rd	I.C. Engine Components: Exhaust Valve, Inlet Valve; Working of Four-Stroke Petrol Engine
6th	1st	Working of Four-Stroke Diesel Engine; Working of Two-Stroke Petrol Engine
	2nd	Working of Two-Stroke Diesel Engine; Comparison of Two-Stroke and Four-Stroke Engines
	3rd	Comparison of C.I. and S.I. Engines; Valve Timing Diagram for Four-Stroke Engines
7th	1st	Port Timing Diagram for Two-Stroke Engines; Fuel System of Petrol Engines
	2nd	Principle of Operation of Simple Carburettor; Principle of Operation of Zenith Carburettor
	3rd	Fuel System of Diesel Engines: Types of Injectors and Fuel

		Pumps
8th	1st	Cooling System: Air Cooling; Water Cooling System with Thermo Siphon Method
	2nd	Water Cooling System with Radiator and Forced Circulation (with line diagram)
	3rd	Comparison of Air Cooling and Water Cooling System; Ignition Systems: Battery Coil Ignition
9th	1st	Ignition Systems: Magneto Ignition (Description & Working); Comparison of Two Systems
	2nd	Types of Lubricating Systems used in I.C. Engines (with line diagram); Governing of I.C. Engines: Hit and Miss Method
	3rd	Governing of I.C. Engines: Quantitative Method, Qualitative Method, Combination Methods & Applications; Objective of Super Charging
10th	1st	CLASS TEST - 1 (Units I, II & III)
	2nd	Performance of I.C. Engines: Brake Power, Indicated Power, Frictional Power
	3rd	Brake and Indicated Mean Effective Pressures; Brake and Indicated Thermal Efficiencies
11th	1st	Mechanical Efficiency, Relative Efficiency; Performance Test
	2nd	Morse Test, Heat Balance Sheet
	3rd	Methods of Determination of B.P., I.P. and F.P.; Simple Numerical Problems on Performance of I.C. Engines
12th	1st	Air Compressors: Functions, Uses of Compressed Air; Types of Air Compressors
	2nd	Single Stage Reciprocating Air Compressor: Construction & Working (with line diagram) using P-V Diagram
	3rd	Multi-Stage Compressors: Advantages over Single Stage Compressors
13th	1st	Rotary Compressors: Centrifugal Compressor, Axial Flow Type Compressor
	2nd	Rotary Compressors: Vane Type Compressor
	3rd	Refrigeration & Air-conditioning: Refrigeration; Refrigerant; COP
14th	1st	Air Refrigeration System: Components, Working & Applications
	2nd	Vapour Compression System: Components, Working & Applications
	3rd	Air Conditioning: Classification of Air-conditioning Systems; Comfort and Industrial Air-Conditioning
15th	1st	Window Air-Conditioner; Summer Air-Conditioning System
	2nd	Winter Air-Conditioning System; Year-Round Air-Conditioning System
	3rd	CLASS TEST - 2 (Units IV & V)

10/8/25

10/08/25

Sagar kumar behera

Lecturer (Stage-II)