Lesson Plan

Name of the faculty: Sh. Aakash Suran, Lecturer in Mechanical Engg.

Discipline: Mechanical

Semester: 4th Mechanical A & B

Subject: Thermodynamics - II

Lesson Plan Duration: 15 weeks (January 2025 to May 2025)

Work Load (Lecture/ Practical) per week (hr): Lectures- 03, Practicals-02

Week	Theory		Practical	
	Lecture day	Topic (including assignment / test)	Practical Day	Topic
1st	1st	IC Engines introduction	1st	Dismantle an IC engine and note down the condition of various parts, removal and fitting of piston, rings, measuring of bore size, crank shaft ovality and assemble it.
	2nd	Working principle of two stroke and four stroke cycle		
	3rd	SI and CI engines, Otto cycle, diesel cycle and dual cycle	2nd	Dismantle an IC engine and note down the condition of various parts, removal and fitting of piston, rings, measuring of bore size, crank shaft ovality and assemble it.
2nd	1st	Location and functions of various parts of IC engines, Materials used for them	1st	Dismantle an IC engine and note down the condition of various parts, removal and fitting of piston, rings, measuring of bore size, crank shaft ovality and assemble it.
	2nd	Concept of IC engine terms: bore, stroke, stroke, dead centre, crank throw		
	3rd	Compression ratio, piston displacement, piston speed	2nd	Dismantle an IC engine and note down the condition of various parts, removal and fitting of piston, rings, measuring of bore size, crank shaft ovality and assemble it.
3rd	1st	Concept of carburetion	1st	

	2nd	Air fuel ratio, Simple carburetor and its application		Servicing of petrol engine.
	3rd	MPFI, common rail system	2nd	Servicing of petrol engine.
4th	1st	Description of battery coil, Magnet ignition system	1st	Servicing of petrol engine.
	2nd	Components of fuel supply system of Diesel engine		
	3rd	Description and working of fuel feed pump, Fuel injection pump,	2nd	Servicing of petrol engine.
5th	1st	fuel injectors and fuel filters	1st	Servicing of petrol engine.
	2nd	Types of Fuel injection systems in diesel engine		Demonstration of electronic ignition system
	3rd	Function of cooling system in IC engine	2nd	Demonstration of electronic ignition system
6th	1st	Air cooling and water cooling system, use of thermostat and radiator.	1st	Demonstration of electronic ignition system
	2nd	Function and types of coolant		
	3rd	Function of lubrication, Lubrication system of IC engine	2nd	Demonstration of electronic ignition system
7th	1st	Engine power - indicated and brake power, Efficiency - mechanical, thermal. relative and volumetric	1st	Demonstration of electronic ignition system
	2nd	Methods of finding indicated and brake power		
	3rd	Morse test for petrol engine	2nd	Valve servicing, grinding, lapping and fitting mechanism and tappet adjustment.
8th	1st	Heat balance sheet, Concept of pollutants in SI and CI engines	1st	Valve servicing, grinding, lapping and fitting mechanism and tappet

	2nd	Pollution control, norms for two or four wheelers. Methods of reducing pollution in IC engines		adjustment.
	3rd	Bharat stage emission standards (BS Norms),	2nd	Valve servicing, grinding, lapping and fitting mechanism and tappet adjustment.
9th	1st	Introduction of steam turbines		Valve servicing, grinding, lapping and fitting mechanism and tappet adjustment.
	2nd	main parts, uses and classification of steam turbine		
	3rd	Construction and working principle of impulse Turbine		Determination of BHP by dynamometer.
10th	1st	Construction and working principle of Reaction Turbine		Determination of BHP by dynamometer.
	2nd	Governing of steam turbines		
	3rd	Steam nozzles - types and applications		Determination of BHP by dynamometer.
11th	1st	Function of a steam condenser, elements of condensing plant		Determination of BHP by dynamometer.
	2nd	Types of steam condenser (Jet and surface).		
	3rd	Comparison between jet condenser and surface condenser		Determination of BHP by dynamometer.
12th	1st	Cooling pond		Morse test on multi-cylinder petrol engine.
	2nd	Cooling towers		
	3rd	Gas Turbines and Jet Propulsion - Introduction		Morse test on multi-cylinder petrol engine.
13th	1st	Classification, open cycle gas turbine and closed cycle gas turbine		Testing of engine pollution.
	2nd	comparison of gas turbines		

		with reciprocating IC engines		
	3rd	applications and limitations of gas turbine		Testing of engine pollution.
14th	1st	Open cycle constant pressure gas turbines - general layout, PV and TS diagram		Testing of engine pollution.
	2nd	Closed cycle gas turbines, PV and TS diagram and working		
	3rd	Principle of operation of ram-jet engine		Demonstration and study of lubrication system of a multi cylinder IC engine
15th	1st	Principle of operation of turbo jet engine		Demonstration and study of lubrication system of a multi cylinder IC engine
	2nd	application of jet engines		Draw heat balance sheet of a 4 stroke IC engine.
	3rd	Supercharger and turbocharger engine		Draw heat balance sheet of a 4 stroke IC engine.
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