Lesson Plan

Name of the Faculty : Sh. Munish Kumar Jain

Discipline : Mechanical Engineering

Semester : 4th

Subject : **THERMODYNAMICS-II**

Lesson Plan duration : 15 weeks (from 22nd March, 2021 to 2nd July, 2021)

Work load per week : Lecture – 03, Practical – 02

Week	Theory		Practical	
	Lecture Day	Topic (Including assessment/test)	Practical Day	Topic
1st	1st	**Unit 1: IC Engines** Introduction, Working principle of two stroke cycle	1st	Introduction about the Lab and brief discussion over the practical work to be conducted
	2nd	Working principle of four stroke cycle		
	3rd	SI engines and CI engines		
2nd	4th	Otto cycle, diesel cycle, dual cycle,	2nd	1. 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.
	5th	Location and functions of various parts of IC engines and materials used for them		
	6th	**Unit 2: Fuel Supply and Ignition System in Petrol Engine** Concept of carburetion, Air fuel ratio,		
3rd	7th	Simple carburetor and its limitations and application	3rd	1. 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.
	8th	Description of battery coil and electro ignition system,		
	9th	fault finding/ and remedial action in ignition system		
4th	10th	Description of petrol injection system	4th	2. Dismantle a carburettor
	11th	**Unit 3: Fuel System of Diesel Engine** Components of fuel system		
	12th	Description and working of fuel feed pump		

5th	13th	Fuel injection pump,	5th	3.Servicing of petrol injection system
	14th	Common rail direct injection (CRDI)		
	15th	Injectors		
6th	16th	**1st sessional test (Tentative)**	6th	Checking of Practical File
	17th	**Assessment**		
	18th	**Unit 4: Cooling and Lubrication** Function of cooling system in IC engine, Air cooling system		
7th	19th	Water cooling system, use of thermostat , use of radiator	7th	4. Valve servicing, grinding, lapping and fitting mechanism and tappet adjustment.
	20th	Function of lubrication, Types and properties of lubricant		
	21st	Lubrication system of engine , Fault finding in cooling and lubrication and remedial action		
8th	22nd	**Unit 5: Testing of IC Engines** Engine power - indicated and brake power, Efficiency - mechanical, thermal, relative and volumetric	8th	5. Inspection of ignition system of a multi-cylinder engine stressing ignition timings, setting, fixing order and contact breaker; gap adjustment, spark plug cleaning.
	23rd	Methods of finding indicated power		
	24th	Methods of finding Brake power		
9th	25th	Morse test for petro1 engine	9th	6. Service of cooling & lubrication system of IC engine and note down the functioning/testing of various components.
	26th	Heat balance sheet, simple numerical problems		
	27th	Concept of pollutants in SI and CI engines, pollution control, norms for two or four wheelers - EURO - 1, EURO - 2,		
10th	28th	Bharat methods of reducing pollution in IC engines, alternative fuels like CNG, LPG, Hydrogen	10th	Checking of Practical File
	29th	**2nd sessional test (Tentative)**		
	30th	**Assessment**		
11th	31st	**Unit 6: Steam Turbines and Steam Condensers** Function and use of steam turbine, Steam nozzles - types and applications	11th	7. Determination of BHP by dynamometer.

	32nd	Steam turbines - impulse, reaction, construction and working principle		
	33rd	Steam turbines - simple and compound, construction and working principle		
12th	34th	Governing of steam turbines, Function of a steam condenser, elements of condensing plant, Classification - jet condenser, surface condenser	12th	8. Morse test on multi-cylinder petrol engine.
	35th	Cooling pond and cooling towers		
	36th	**Unit 7: Gas Turbines and Jet Propulsion** Classification, open cycle gas turbine and closed cycle gas turbine,		
13th	37th	comparison of gas turbines with reciprocating IC engines, applications and limitations of gas turbine	13th	9. Draw layout of modern automobile workshop and note down the special tools and equipments in each shop.
	38th	Open cycle constant pressure gas turbines - general layout, PV and TS diagram and working of gas turbine		
	39th	Closed cycle gas turbines, PV and TS diagram and working		
14th	40th	Principle of operation of ram-jet engine and turbo jet engine - application of jet engines	14th	10. Local visit to roadways or private automobile workshop.
	41st	Rocket engine - its principle of working and applications, Fuels used in jet propulsion		
	42nd	**3rd sessional test (Tentative)**		
15th	43rd	**Assessment**	15th	Checking of Practical File & Evaluation
	44th	Revision		
	45th	Revision		