

## Lesson Plan

<b>Name of faculty member</b>		HITESH AGGARWAL		
<b>Discipline</b>		MECHANICAL ENGINEERING		
<b>Semester</b>		4th		
<b>Subject</b>		THERMODYNAMICS -II		
<b>Lesson plan duration</b>		15 week		
<b>Work Load (Lecturer/ Practical) per week (In hours)</b>		Lectures-03, Practicals-02 (each group)		
Week	Theory		Practical	
	Lecturer day	Topic ( including assignment/test)	Practical day	Topic
1st	1st	<b>Unit 1- I. C. Engines</b> Introduction to IC Engines	1st	Study of a two stroke engine using cut section model, note the function and material of each part (Groups-G1, G2 and G3)
	2nd	Working principle of two stroke and four stroke cycle		
	3rd	Introduction to SI engines with details		
2nd	4th	Introduction to CI engines with details	2nd	Study of a four stroke engine using cut section model. Note the function of each part (Groups-G1, G2 and G3)
	5th	Study of Otto cycle and diesel cycle		
	6th	Study of Dual cycle * Assignment- Difference between two stroke and four stroke engines and difference between petrol engine and diesel engine		
3rd	7th	Location and functions of various parts of IC engines and materials used for them	3rd	Revision of 1st and 2nd practicals
	8th	Concept of IC engine terms: bore, stroke, dead centre, crank throw, compression ratio, piston displacement, piston speed and Revision		
	9th	<b>Unit 2-Fuel supply in Petrol Engines</b> Concept of carburetion (Fuel Supply in Petrol Engines)		
4th	10th	Air fuel ratio concepts and requirements under different load conditions	4th	Study of battery ignition system of a multi-cylinder petrol engine stressing ignition timings, setting, fixing order and contact breaker; gap adjustment (Groups-G1, G2 and G3)
	11th	Working of Simple carburetor		
	12th	Applications of Simple carburetor		
5th	13th	Details of MPFI (Multi Point fuel Injection) and common rail system	5th	Study of cooling of IC engine.
	14th	Working of super charging and turbo charger and revision * Assignment- Working of simple carburetion, MPFI and Common rail system		
	15th	Test of 1st and 2nd unit		
6th	16th	<b>Unit 3-Fuel system of Diesel Engines</b> Components of fuel system of diesel engine	6th	Revision of 3rd and 4th practicals
	17th	Description and working of fuel feed pump		
	18th	Fuel injection pump		
7th	19th	Injectors	7th	Study of lubricating system of IC engine (Groups-G1, G2 and G3)
	20th	Revision of unit 3 Assignment- Working of fuel system of diesel engine and pintaux nozzle		
	21st	<b>Unit 4-Ignition system of IC Engines</b> Introduction of ignition systems of IC Engines		
8th	22nd	Description of battery coil and magnet ignition system	8th	Determination of BHP by dynamometer (Groups-G1, G2 and G3)
	23rd	Description of Electronic ignition system		
	24th	Fault finding in ignition system and remedial action		
9th	25th	Revision of topics as per students feedback of all four units * Assignment- Ignition system working with neat sketch of battery coil ignition system	9th	Revision of 5th and 6th practicals
	26th	Test of 3rd and 4th unit		
	27th	<b>Unit 5-Cooling and Lubrication</b> Introduction of cooling system in IC engine		
10th	28th	Function of cooling system in IC engine	10th	Morse test on multi-cylinder petrol engine (Groups-G1, G2 and G3)
	29th	Working of Air cooling and water cooling system		
	30th	Use of thermostat, radiator and forced circulation in water cooling (description with line diagram)		
11th	31st	Various functions of lubrication	11th	Morse test on multi-cylinder petrol engine (Groups-G1, G2 and G3)
	32nd	Types and properties of lubricant		
	33rd	Lubrication system of engine		
12th	34th	Fault finding in cooling and lubrication and remedial action	12th	Revision of 1st, 2nd and 3rd practicals
	35th	Revision of 7th unit Assignment- Working of Air cooling and water cooling system, Properties of lubricants		
	36th	<b>Unit 6-Testing of IC Engines</b> power - indicated and brake power		

13th	37th	Efficiency - mechanical, thermal. relative and volumetric	13th	Local visit to roadways or private automobile workshops (Groups-G1, G2 and G3)
	38th	Methods of finding indicated and brake power		
	39th	Morse test for petrol engine		
14th	40th	Heat balance sheet of engine	14th	Revision of 4th, 5th and 6th practicals
	41st	Concept of pollutants in SI and CI engines, pollution control		
	42nd	Norms for two or four wheelers – BIS – I, II, III and IV methods of reducing pollution in IC engines		
15th	43rd	Alternative fuels like CNG and LPG for IC Engines	15th	Revision of 7th practical
	44th	Revision of all units * Assignment of different type of efficiencies with norms and alternative fuel advantages		
	45th	Test of Vth and Vith unit		

