NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)

LESSON PLAN

SUBJECT: Th-4 (AUTOMOTIVE ENGINE)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	Petrol engines & its constructional details	10	10
2	Diesel engine & its constructional details	10	10
3	Performance of I.C engine	10	10
4	Fuel feed system for petrol & diesel engine	14	14
5	Cooling system	8	8
6	Lubrication system	8	8
	Total Period:	60	60

Discipline: AUTOMOBILE ENGINEERING	Semester: 4th	Name of the Teaching Faculty: Er.Pradyumna Kumar Khilar
Week	**Class Day**	**Theory / Practical Topics**
1st	1st	*1 Petrol engine and its constructional details*
	2nd	1.1 Working principle of two stroke & four stroke petrol engine.
	3rd	1.1 Working principle of two stroke & four stroke petrol engine.
	4th	1.2 Constructional details of petrol engine with materials. Engine components like piston, cylinder block, valve, connecting rod, crank shaft, crank slot.
2nd	1st	1.2 Constructional details of petrol engine with materials. Engine components like piston, cylinder block, valve, connecting rod, crank shaft, crank slot.
	2nd	1.2 Constructional details of petrol engine with materials. Engine components like piston, cylinder block, valve, connecting rod, crank shaft, crank slot.
	3rd	1.3 Cylinder arrangement: inline and v-type engine firing order of multi cylinder engine.
	4th	1.3 Cylinder arrangement: inline and v-type engine firing order of multi cylinder engine.
3rd	1st	1.4 Side valve actuating mechanism over head valve actuating mechanism.
	2nd	1.4 Side valve actuating mechanism over head valve actuating mechanism.
	3rd	1.5 I, F & T type valve arrangement, valve clearance.

3rd	**4th**	*1.5 I, F & T type valve arrangement, valve clearance.*
4th	**1st**	1.6 Timining gear, vibration damper, inlet & exhaust manifold
	2nd	1.6 Timining gear, vibration damper, inlet & exhaust manifold
	3rd	2. Diesel engine and its constructional details
	4th	2.1 Working principle two strokes & four stroke diesel engine.
5th	**1st**	2.1 Working principle two strokes & four stroke diesel engine.
	2nd	2.2 Types, advantages & limitations of diesel engine over petrol engine.
	3rd	2.3 Function & types of combustion chamber.
	4th	2.3 Function & types of combustion chamber.
6th	**1st**	2.4 Direct injection type combustion chamber, pre combustion chamber, turbulence chamber. Their advantages & disadvantages.
	2nd	2.4 Direct injection type combustion chamber, pre combustion chamber, turbulence chamber. Their advantages & disadvantages.
	3rd	2.4 Direct injection type combustion chamber, pre combustion chamber, turbulence chamber. Their advantages & disadvantages.
	4th	3. Performance of I.C engine
7th	**1st**	3.1 Define mechanical efficiency, Indicated thermal efficiency,Relative efficiency,brake thermal efficiency,overall efficiency,mean effective pressure & specific fuel consumption.

7th	**2nd**	3.1 Define mechanical efficiency, Indicated thermal efficiency,Relative efficiency,brake thermal efficiency,overall efficiency,mean effective pressure & specific fuel consumption.
	3rd	3.2 Define air-fuel ratio & calorific value of fuel.
	4th	3.2 Define air-fuel ratio & calorific value of fuel.
8th	**1st**	3.3 Morse – test and preparation of heat balance sheet
	2nd	3.3 Morse – test and preparation of heat balance sheet
	3rd	3.4 Work out problems to determine efficiencies & specific fuel consumption.
	4th	*3.4 Work out problems to determine efficiencies & specific fuel consumption.*
9th	**1st**	**MIDSEM EXAM**
	2nd	**MIDSEM EXAM**
	3rd	4. Fuel feed system for petrol & diesels engine
	4th	4.1 Line diagram of petrol engine fuel supply system.
10th	**1st**	4.2 Components of petrol engine fuel supply system like fuel tanks, fuel lines, fuel pumps, (mechanical & electrical) fuel filter.
	2nd	4.2 Components of petrol engine fuel supply system like fuel tanks, fuel lines, fuel pumps, (mechanical & electrical) fuel filter.
	3rd	4.3 Requirements and working principle of carburetors. Air fuel ratios for different conditions in carburettors.

10th	**4th**	4.4 Circuits of various types of carburetor, like down draught carburetor ,side draught carburetor.
11th	**1st**	4.5 Description of motorcycle carburetor
	2nd	*4.6 line diagram of diesel engine fuel supply system.*
	3rd	4.7 Requirements and types of fuel injection system.
	4th	4.8 Air injection, solid injection individual pump system injection common rail system injection
12th	**1st**	4.9 TBL system MPFI system PFI system ECM control functions
	2nd	4.10 Constructional details of fuel pump.
	3rd	4.11 Fuel injectors.
	4th	4.12 Governing system of fuel: Mechanical governor pneumatics governor. Hydraulic governor.
13th	**1st**	*5.Cooling System*
	2nd	5.1 Necessity & types of engine cooling.
	3rd	5.2 Constructional details of air cooling & water cooling (thermo siphon & pump air circulation)
	4th	5.3 Advantages and limitations of air cooling.
14th	**1st**	5.4 Water pump thermostat, radiator.

14th	**2nd**	5.5 Anti-freezing and anti-corrosive additives.
	3rd	6. Lubrication System
	4th	6.1 Types, requirements and properties (flash point & fire points) of lubricants.
15th	**1st**	6.2 Types of lubrication system gravity type, Splash type, pressure type, dry sump type, semi pressure type etc.
	2nd	6.2 Types of lubrication system gravity type, Splash type, pressure type, dry sump type, semi pressure type etc.
	3rd	6.3 Parts of lubricating system like oil sump, oil cooler, oil filter, oil pressure gauge, oil pressure indicating light ,oil label indicator.
	4th	6.4 Oil filters and its types – full flow filter and bypass filter.crank case ventilation.