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

LESSON PLAN

SUBJECT : Th-4 (AUTOMOTIVE ENGINE)

Name Of The Faculty :- Er. Pradyumna Kumar Khilar
Branch :- Automobile Engineering
Session :- 2024-25
Semester :- 4th
Examination :- 2025 (S)

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	11
2	Diesel engine & its constructional details	10	11
3	Performance of I.C engine	10	11
4	Fuel feed system for petrol & diesel engine	14	20
5	Cooling system	8	10
6	Lubrication system	8	8
	Total Period:	60	71

P. Khilar 03/02/2025
Sign of Faculty

03/02/25
Sign of H.O.D.

Discipline: AUTOMOBILE ENGINEERING	Semester: 4th	**Name of the Teaching Faculty:** Er. Pradyumna Kumar Khilar
		SESSION : 2024-25 **EXAMINATION :** 2025 (S)
Week	**Class Day**	**Topics to be Covered**
1st	1st	Introduction to Automotive Engine.
	2nd	**1 Petrol engine and its constructional details** 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.
	5th	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	1.3 Cylinder arrangement: inline and v-type engine firing order of multi cylinder engine.
	3rd	1.3 Cylinder arrangement: inline and v-type engine firing order of multi cylinder engine.
	4th	1.4 Side valve actuating mechanism over head valve actuating mechanism.
	5th	1.5 I, F & T type valve arrangement, valve clearance.
3rd	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** 2.1 Working principle two strokes & four stroke diesel engine.
	4th	2.1 Working principle two strokes & four stroke diesel engine.
	5th	2.2 Types, advantages & limitations of diesel engine over petrol engine.
4th	1st	2.2 Types, advantages & limitations of diesel engine over petrol 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.
	5th	2.3 Function & types of combustion chamber.
5th	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.

Week	Class Day	Topics to be Covered
5th	3rd	2.4 Direct injection type combustion chamber, pre combustion chamber, turbulence chamber. Their advantages & disadvantages.
	4th	**3. Performance of I.C engine** 3.1 Define mechanical efficiency, Indicated thermal efficiency,Relative efficiency,brake thermal efficiency,overall efficiency,mean effective pressure & specific fuel consumption.
	5th	3.1 Define mechanical efficiency, Indicated thermal efficiency,Relative efficiency,brake thermal efficiency,overall efficiency,mean effective pressure & specific fuel consumption.
6th	1st	3.1 Define mechanical efficiency, Indicated thermal efficiency,Relative efficiency,brake thermal efficiency,overall efficiency,mean effective pressure & specific fuel consumption.
	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.
	5th	3.3 Morse — test and preparation of heat balance sheet
7th	1st	3.3 Morse — test and preparation of heat balance sheet
	2nd	3.4 Work out problems to determine efficiencies & specific fuel consumption.
	3rd	3.4 Work out problems to determine efficiencies & specific fuel consumption.
	4th	3.4 Work out problems to determine efficiencies & specific fuel consumption.
	5th	**4. Fuel feed system for petrol & diesels engine** 4.1 Line diagram of petrol engine fuel supply system.
8th	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.
	4th	4.3 Requirements and working principle of carburetors. Air fuel ratios for different conditions in carburettors.
	5th	4.4 Circuits of various types of carburetor, like down draught carburetor ,side draught carburetor.
9th	1st	4.4 Circuits of various types of carburetor, like down draught carburetor ,side draught carburetor.
	2nd	4.5 Description of motorcycle carburetor

Week	Class Day	Topics to be Covered
9th	3rd	4.6 line diagram of diesel engine fuel supply system.
	4th	4.7 Requirements and types of fuel injection system.
	5th	4.8 Air injection, solid injection individual pump system injection common rail system injection
10th	1st	4.8 Air injection, solid injection individual pump system injection common rail system injection
	2nd	4.8 Air injection, solid injection individual pump system injection common rail system injection
	3rd	4.9 TBL system MPFI system PFI system ECM control functions
	4th	4.9 TBL system MPFI system PFI system ECM control functions
	5th	4.9 TBL system MPFI system PFI system ECM control functions
11th	1st	4.10 Constructional details of fuel pump.
	2nd	4.11 Fuel injectors.
	3rd	**INTERNAL ASSESMENT.**
	4th	**INTERNAL ASSESMENT.**
	5th	4.12 Governing system of fuel: Mechanical governor pneumatics governor. Hydraulic governor.
12th	1st	4.12 Governing system of fuel: Mechanical governor pneumatics governor. Hydraulic governor.
	2nd	**5.Cooling System** 5.1 Necessity & types of engine cooling.
	3rd	5.1 Necessity & types of engine cooling.
	4th	5.2 Constructional details of air cooling & water cooling (thermo siphon & pump air circulation)
	5th	5.2 Constructional details of air cooling & water cooling (thermo siphon & pump air circulation)
13th	1st	5.3 Advantages and limitations of air cooling.
	2nd	5.3 Advantages and limitations of air cooling.
	3rd	5.4 Water pump thermostat, radiator.
	4th	5.4 Water pump thermostat, radiator.
	5th	5.5 Anti-freezing and anti-corrosive additives.
14th	1st	5.5 Anti-freezing and anti-corrosive additives.
	2nd	**6. Lubrication System** 6.1 Types, requirements and properties (flash point & fire points) of lubricants.

Week	Class Day	Topics to be Covered
14th	3rd	6.1 Types, requirements and properties (flash point & fire points) of lubricants.
	4th	6.2 Types of lubrication system gravity type, Splash type, pressure type, dry sump type, semi pressure type etc.
	5th	6.2 Types of lubrication system gravity type, Splash type, pressure type, dry sump type, semi pressure type etc.
15th	1st	6.3 Parts of lubricating system like oil sump, oil cooler, oil filter, oil pressure gauge, oil pressure indicating light ,oil label indicator.
	2nd	6.3 Parts of lubricating system like oil sump, oil cooler, oil filter, oil pressure gauge, oil pressure indicating light ,oil label indicator.
	3rd	6.4 Oil filters and its types — full flow filter and bypass filter.crank case ventilation.
	4th	6.4 Oil filters and its types — full flow filter and bypass filter.crank case ventilation.
	5th	REVISION

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