BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF AUTOMOBILE ENGINEERING

LESSON PLAN

SUBJECT: **AUTOMOTIVE ENGINE (TH 4)**

FACULTY: **NILAKANTHA NAYAK**

DATE-**14/02/2023 - 23/05/2023**

ACCADEMIC SESSION: **2022-23(S)**

SEMESTER: **4TH**

HOD (Auto. Engg.)

Sr. Lecturer
Automobile Engg. Dept.
BOSE, Cuttack

AUTOMOBILE ENGINEERING DEPATMENT

VISSION:

To develop competent, disciplined imaginative Automobile engineers, equipped with core competency and technical skills useful to the learning / teaching community and the industrial fraternity.

MISSION:

M1: To provide with operational and technical inputs to get innovative and research ideas in the field of automotive engineering.

M2: To give inputs for higher education with management qualities for the betterment of the society.

M3: Skilling with modern engineering tools necessary to meet and solve engineering problems.

PROGRAM EDUCATIONAL OBJECTIVES

PEO1: To provide technical skills to diagnose and apply the concept of automotive system

PEO2: To prepare to design, fabricate and innovate in automobile sector to face the industrial challenges.

PEO3: To inculcate with good communication skills, ethics and entrepreneurship skills to play the key role in automotive industry.

Discipline:-**Automobile Engineering .**	Semester :-**4TH**	Name of the teaching faculty :- **NILAKANTHA NAYAK**
Subject Name :- **AUTOMOTIVE ENGINE**	No. Of Days/Week Class Allotted :- **04 Periods/Week** **(Monday, Tuesday ,Wednesday, Thursday, – 1 Period Each)**	Semester from Date -**14/02/2023** To Date -**23/05/2023** **No. of Weeks:16**
WEEK	Class Day	Theory topics
1ST (3P)	14/02/2023	Introduction class
	15/02/2023	**1 Petrol engine and its constructional details** 1.1 Working principle of two stroke & four stroke petrol engine.
	16/02/2023	1.1 Working principle of two stroke & four stroke petrol engine.
2nd (4P)	20/02/2023	1.2 Constructional details of petrol engine with materials. Engine components like piston, cylinder block, valve, connecting rod, crank shaft, crank slot.
	21/02/2023	1.2 Constructional details of petrol engine with materials. Engine components like piston, cylinder block, valve, connecting rod, crank shaft, crank slot.
	22/02/2023	1.3 Cylinder arrangement: inline and v-type engine firing order of multi cylinder engine.
	23/02/2023	1.4 Side valve actuating mechanism over head valve actuating mechanism.
3rd (4P)	27/02/2023	1.5 I, F & T type valve arrangement, valve clearance.
	28/02/2023	1.6 Timining gear, vibration damper, inlet & exhaust manifold.
	01/03/2023	**2. Diesel engine and its constructional details** 2.1 Working principle two strokes diesel engine.

	02/03/2023	2.2 Types, advantages & limitations of diesel engine over petrol engine.
4th (2P)	06/03/2023	2.3 Function & types of combustion chamber.
	09/03/2023	2.4 Direct injection type combustion chamber, pre combustion chamber, turbulence chamber. Their advantages & disadvantages.
5th (4P)	13/03/2023	2.4 Direct injection type combustion chamber, pre combustion chamber, turbulence chamber. Their advantages & disadvantages.
	14/03/2023	**CLASS TEST**
	15/03/2023	**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.
	16/03/2023	**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. 3.2 Define air-fuel ratio & calorific value of fuel.
6th (4P)	20/03/2023	3.3 Morse – test and preparation of heat balance sheet
	21/03/2023	3.4 Work out problems to determine efficiencies & specific fuel consumption.
	22/03/2023	3.4 Work out problems to determine efficiencies & specific fuel consumption.
	23/03/2023	3.4 Work out problems to determine efficiencies & specific fuel consumption.
7th (3P)	27/03/2023	3.4 Work out problems to determine efficiencies & specific fuel consumption.
	28/03/2023	3.4 Work out problems to determine efficiencies & specific fuel consumption.
	29/03/2023	Power point presentation of beyond the syllabus like new technology in Automobiles.
8th (4P)	03/04/2023	**4. Fuel feed system for petrol & diesels engine** 4.1 Line diagram of petrol engine fuel supply system.

	04/04/2023	4.2 Components of petrol engine fuel supply system like fuel tanks, fuel lines, fuel pumps, (mechanical & electrical) fuel filter.
	05/04/2023	4.2 Components of petrol engine fuel supply system like fuel tanks, fuel lines, fuel pumps, (mechanical & electrical) fuel filter.
	06/04/2023	4.3 Requirements and working principle of carburetors. Air fuel ratios for different conditions in carburetors.
9th (4P)	10/04/2023	4.4 Circuits of various types of carburettor, like down draught carburettors, side draught carburettor.
	11/04/2023	4.5 Description of motorcycle carburettor. 4.6 line diagram of diesel engine fuel supply system.
	12/04/2023	4.7 Requirements and types of fuel injection system.
	13/04/2023	4.8 Air injection, solid injection individual pump system injection common rail system injection.
10th (4P)	17/04/2023	4.8 Air injection, solid injection individual pump system injection common rail system injection.
	18/04/2023	4.9 TBL system MPFI system PFI system ECM control functions. 4.10 Constructional details of fuel pump.
	19/04/2023	4.11 Fuel injectors. 4.12 Governing system of fuel: Mechanical governor pneumatics governor.
	20/04/2023	4.12 Governing system of fuel: Mechanical governor pneumatics governor
11th (4P)	24/04/2023	**CLASS TEST**
	25/04/2023	**5.Cooling System** 5.1 Necessity & types of engine cooling. 5.2 Constructional details of air cooling & water cooling (thermo siphon & pump air circulation)
	26/04/2023	5.2 Constructional details of air cooling & water cooling (thermo siphon & pump air circulation)
	27/04/2023	5.3 Advantages and limitations of air cooling.

12th (4P)	01/05/2023	5.4 Water pump thermostat, radiator.
		5.4 cont. 5.5 Anti-freezing and anti-corrosive additives.
	02/05/2023	**6. Lubrication System** 6.1 Types, requirements and properties (flash point & fire points) of lubricants.
	03/05/2023	6.2 Types of lubrication system gravity type, Splash type, pressure type, dry sump type, semi pressure type etc.
	04/05/2023	6.2 Types of lubrication system gravity type, Splash type, pressure type, dry sump type, semi pressure type etc.
13th (4P)	08/05/2023	6.3 Parts of lubricating system like oil sump, oil cooler, oil filter, oil pressure gauge, oil pressure indicating light,oil label indicator.
	09/05/2023	6.3 Parts of lubricating system like oil sump, oil cooler, oil filter, oil pressure gauge, oil pressure indicating light,oil label indicator.
	10/05/2023	6.4 Oil filters and its types – full flow filter and bypass filter. Crank case ventilation.
	11/05/2023	6.4 Oil filters and its types – full flow filter and bypass filter. Crank case ventilation.
14th (4P)	15/05/2023	**Power Point Presentation.**
	16/05/2023	**MCQ TEST**
	17/05/2023	Doubt clearing class.
	18/05/2023	Doubt clearing class.
15th (2P)	22/05/2023	Previous year Questions discussion.
	23/05/2023	Previous year Questions discussion.