LESSON PLAN

SUBJECT :- HYDRAULICS & PNEUMATIC CONTROL

By –S.S SAHOO (Sr.Lect.)

10/10/2022

AUTOMOBILE ENGG.

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 Engg.**	Semester :-**4th**	Name of the teaching faculty :- **SUDHANSU SEKHAR SAHOO**
Subject Name :- **HYDRAULICS & PNEUMATIC CONTROL**	No. Of Days/Week Class Allotted :- **04 Periods/Week (Monday ,Wednesday, Thursday, Friday , – 1 Period Each)**	Semester from Date -**10/03/2022** To Date - **10/06/2022**
Week	Class Day	Theory topics
1st	10.03.2022	Introduction of **HYDRAULICS & PNEUMATIC CONTROL**
2nd		**1. Fluid Mechanics**
	11.03.2022	1.1 Fluid properties. Define fluid, description of fluid properties like Density
	14.03.2022	Dynamic viscosity, kinematic viscosity, surface tension Capillary phenomenon
	16.03.2022	Solve simple numerical.
	17.03.2022	Solve simple numerical.
	21.03.2022	1.2 Measurement of pressure, Concept of atmospheric pressure, gauge pressure, absolute pressure, pressure gauges- Piezometer tube
	23.03.2022	Simple & differential monometer, Micro Manometer (simple problems on manometers) Bourdon tube pressure gauge.
	24.03.2022	-DO-
	28.03.2022	-DO-
	30.03.2022	-DO-
3rd		**2. Hydro dynamics.**
	31.03.2022	**CLASS TEST**
	04.04.2022	2.1 Law of continuity and its application. 2.2 Bernoulli's Theorem.
	06.04.2022	Energy possessed by the liquid in motion, Bernoulli's theorem and its applications such as venturi meter,
	07.04.2022	Orifice meter & Pitot tube (Analytical treatment with derivation for measurement of discharge is expected.)
	08.04.2022	2.3 Hydraulic Coefficients. Concept of vena contract. Coefficient of contraction, Coefficient of velocity, coefficient of discharge, relation between the hydraulic coefficients.
	11.04.2022	2.4 Types of fluid flow Steady, unsteady, rotational, irrotational, laminar, turbulent, one, two & three dimensional flow, uniform & non uniform flow
	13.04.2022	**-DO-**
4th		
	18.04.2022	Problem solving.
	20.04.2022	Problem solving.

	21.04.2022	Problem solving.
	22.04.2022	Problem solving.
	25.04.2022	**CLASS TEST**
5th		**3. Hydraulic Devices**
	27.04.2022	3.1 Simple Hydraulic devices. Working principles, construction and applications of hydraulic jack, hydraulic Ram, hydraulic lift, hydraulic press.
	28.04.2022	3.2 Centrifugal Pumps. Types, construction & working of centrifugal pump. Types of casing. Need of priming, Heads, Losses & efficiencies.
	29.04.2022	centrifugal pump (NO analytical treatment). Net positive suction head, fault finding &remedies, pump selection.
6th		
	02.05.2022	3.3 Reciprocating Pumps. Constriction and working of single & double acting reciprocating pump, positive & negative slip.
	04.05.2022	Air vessels- their function & advantages. Power & efficiencies of reciprocating pump. Reasons of cavitations & separation
	05.05.2022	-DO-
7th		**4. Basic components of Hydraulic & Pneumatic systems.**
	06.05.2022	4.1 Hydraulic & Pneumatic system components
	09.05.2022	4.2 Air Motors
8th		
	11.05.2022	4.3 Hydraulic Actuator – single and double cylinder
	12.05.2022	4.4 Valves: Classification of valves, pressure control, directional control, sequencing, synchronizing and flow control valve.
	13.05.2022	**CLASS TEST**
9th		**5. Accessories of hydraulic & pneumatic circuit.**
	18.05.2022	5.1 Filters: Type, functions, construction.
	19.05.2022	-DO-
	20.05.2022	5.2 Hoses & connectors: Type, construction and applications.
	23.05.2022	-DO-
	25.05.2022	5.3 Seals and gaskets: Types, function, construction.
10th		**6. Hydro Pneumatic Systems & Circuits**
	26.05.2022	6.1 Comparison of Hydraulic and Pneumatic circuits.
	27.05.2022	-DO-
11th		
	01.06.2022	6.2 Hydraulic Circuits: Meter in, Meter out, Bleed off, Sequencing, Applications of hydraulic circuits

	02.06.2022	6.3 Simple Pneumatic Circuits.
	03.06.2022	Speed Control Circuits, Sequencing circuits, Application of Pneumatic Circuit
12th		
	06.06.2022	DOUBT CLEARING CLASS
13th		
	08.06.2022	**ASSIGNMENT & CLASS TEST**
	09.06.2022	REVISION
	09.06.2022	PREVIOUS YEAR QUESTION PAPER DISCUSSION
	10.06.2022	PREVIOUS YEAR QUESTION PAPER DISCUSSION & MCQ TEST