LESSON PLAN FOR HYDRAULICS AND PNEUMATICS (SESSION:AUG-DEC 2024) MECHANICAL ENGG. 5TH SEMESTER

S.NO.	MONTH	WEEK	DAY	PARTICULARS	REMARKS
1	August	3rd	12,13,14,16	Properties of fluid : Density, Specific gravity, Specific Weight, Specific Volume, Dynamic Viscosity, Kinematic Viscosity, Surface tension, Capillarity, Vapour Pressure, Compressibility.	
		4th	19,20,21,23	Fluid Pressure & Pressure Measurement: Fluid pressure, Pressure head, Pressure intensity, Concept of vacuum and gauge pressures, atmospheric pressure, absolute pressure, Simple and differential manometers, Bourdan pressure gauge.	
		5th	27,28,30		
2	Sep	1st	2,3,4,6		
		2nd	9,10,11,13	Fluid Flow: Types of fluid flows, Path line and Stream line, Continuity equation, Bernoulli's theorem for ideal fluid, Principle of operation of Venturimeter, Orifice meter and Pitot tube, Derivations for discharge, coefficient of discharge and simple numerical problems.	
		3rd	16,17,18,20	Flow Through Pipes: Laminar and turbulent flows; Darcy's equation and Chezy's equation for frictional losses (Formula for the above terms withoutproof), Minor losses in pipes, Hydraulic gradient and total gradient line, Simple Numerical problems to estimate losses only	
		4th	23,24,25,27,30		
3	Oct	1ST	1,4	Impact of jets: Impact of jet on fixed vertical, moving vertical flat plates, Impact of jet on curved vanes with special reference to turbines , Simple Numerical on work done and efficiency.	
		2ND	7,8,9,11		
		3RD	14,15,16,18		
		4TH	21,22,23,25	Hydraulic Turbines: Layout of hydroelectric power plant, Features of Hydro electric power plant, Classification of hydraulic turbines, Selection of turbine on the basis of head and discharge available, Construction and working principle of Pelton wheel, Francis and Kaplan turbines, Draft tubes – types and construction, Concept of cavitation in turbines, Calculation of Work done, Power, efficiency of turbines, Unit quantities (Formula only) and simple numerical.	
4	Nov	1ST	2,3,4,6		
		2ND	9,10,11		
		3RD	16,17,18,20,25	Centrifugal Pumps (Problems omitted): Principle of working and applications, Types of casings and impellers, Concept of multistage, Concept of Priming and, Cavitation, Manometric head, Work done, Manometric efficiency, Overall efficiency.	
		4TH	27,30,31	Reciprocating Pumps (Problems omitted): Construction, working principle and applications of single and double acting reciprocating pumps, Concept of Slip, Negative slip, Cavitation and separation	
5	Dec	1ST	1,3		

REFERENCES: 1.Fluid mechanics by R.K Bansal. 2. Fluid Mechanics by Dr AK Jain, Khanna Publishers, New Delhi

HOD

MITHUN THAKUR
LECT. MECH. ENGG.