

GOVERNMENT CO. ED POLYTECHNIC RAIPUR (C.G)

DEPARTMENT OF mechanical

LESSON PLAN

Session: 2024-25

Session start as per university calendar:

Course Name: Fluidm

Name of Subject Teacher: Mrs. Alpana Bhandari

Lecturer plan T+P =

Course code:2037474(037)

Discipline: All Branch		Semester: 4th	Class room Instruction Start Date:						
S.No.	Chapter No.	Topics	Sub Topic to be covered under this unit	Total hour	No. of periods planned	Actual No of periods taken	Date of Class Conduction	Use of AV resources if any	Remarks if any
1	1	Fluid properties and Fluid Pressure	1.1 Introduction and classification of fluid.	24	2	1	03/03/25	NA	
			1.2 Fluid properties- Density, Specific gravity, specific weight, specific volume, Dynamic & Kinematic viscosity, Surface tension, Capillarity, Vapour pressure, Compressibility, Bulk modulus.		3	2	04/03/25 05/03/25		
			1.3 Types of fluids: Ideal, Real, Newtonian, Non-Newtonian fluid		1	1	06/03/25		
			1.4 Continuity equation and simple numerical problems based on it.		4	3	07/03/25 08/03/25 10/03/25		
			1.5 Pressure, Fluid pressure, pressure head, Pressure Intensity, Concept of absolute Vacuum, Gauge Pressure, Atmospheric Pressure, Absolute Pressure.		3	2	12/03/25 14/03/25		
			1.6 Pressure measurement- Manometer, U- tube manometer, Incline manometer, Inverted U manometer, Piezometer.		3	2	22/03/25 24/03/25		
			1.7 Concept of Total pressure, Centre of pressure, Pascal's law, Hydrostatic forces on plane and curved surface immersed in liquid and simple problems on it.		3	2	25/03/25 27/03/25		
			1.8 Metacenter		2	1	28/03/25 01/03/25		
			2.1 Various forms of energies applicable to fluid flow – Potential energy, Kinetic energy, Pressure energy, Total energy		2	2	04/03/25 05/03/25		

2	2	Fluid flow energy equation	2.2 Concept of datum pressure, Velocity and total head of fluid in motion. 2.3 Energy equation- Steady flow energy equation and derivation of Bernoulli Theorem and its assumption and practical application. Simple numerical problems on Bernoulli equation. 3.1 Fluid flow- Steady, unsteady, uniform, non uniform, laminar and turbulent flow 3.2 Flow measurement- definition and types of orifices, Vena contraction, coefficient of contraction, Experimental determination of C_c , C_d , C_v 3.3 Construction, working, application and simple problem on - Venturimeter, orifice meter, pitot tube, Nozzle. 3.4 Viscous flow-Concept of viscosity of fluids, Reynolds number and its criteria for plate and pipes, Darcy-Weisbach equation, loss of head due to friction in pipe, Hagen-Poiseuille formula 3.5 Flow through pipes- Pipes in series, Pipes in parallel, Head losses- various types of minor and major energy loss occur in fluid flow through pipes. H.G.L. and T.E.L., surge tank, water hammer and its effects.	8	2	2	04/03/25 05/03/25	NA	
3	3	Flow through pipes	4.1 Classification of hydraulic turbines 4.2 Functions and working principle of Impulse and reaction turbine 4.3 Comparison of impulse and reaction turbine 4.4 Construction and working principle of Pelton wheel, Francis and Kaplan turbine 4.5 Selection of turbine on the basis of head and discharge, 4.6 Draft tube - types, constructions, and benefit of draft tubes 4.7 Calculation of work done, power, efficiency of turbines 4.8 Safety precaution on turbines 4.9 Impact of jet on flat and curved plate in stationary and moving blades. 5.1 Centrifugal pumps- Construction, working principle and application of centrifugal pump. Total head of pump, Classification of centrifugal pump, impellers, casing, stages, priming and cavitations.	17	4	3	10/03/25 11/03/25 12/03/25	NA	
4	4	Hydraulic Turbine		17	4	3	17/03/25 18/03/25 19/03/25 20/03/25 21/03/25 24/03/25 26/03/25	NA	
					1	1	04/04/25		
					2	1	05/04/25		
					1	1	07/04/25		
					3	2	08/04/25 09/04/25		
					2	1	10/04/25		
					2	1	12/04/25		
					2	2	15/04/25		
					1	1	16/04/25		
					3	3	17/04/25 17/04/25		
					5	4	21/03/25 21/03/25 02/04/25		

S.	5	Pumps	5.2 Reciprocating pumps- Construction, working principle and application of reciprocating pump, single acting and double acting, slip, negative slip, use of air vessels, Comparison of centrifugal and reciprocating pump. 5.3 Submersible pump- Construction, working principle and application of submersible pump.	14		NA
				5	4	
				3	3	02/05/10 may/2005

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Doubts & PVR Discussion

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13/4/15
may/2005

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