Discipline : **MECHANICAL ENGG**	Semester : **4TH**	Name of the Teaching Faculty: **Pradeep Kumar Jena**
Subject: **FLUID MECHANICS**	No. of days/per week class allotted:**05**	No. of Weeks: **15** Semester From date : 14.02 23 To Date: 23.05.23
Week	Class Day	Theory / Practical Topics
1ST	1ST	**1.0** Introduction about fluid mechanics and hydraulic machines
	2ND	Definitions and Units of Density, Specific weight
	3RD	Definitions and Units of specific gravity, specific volume
	4TH	Definitions and Units of Dynamic viscosity, kinematic viscosity
	5TH	Definitions and Units of surface tension , Capillary phenomenon
2ND	1ST	**2.0** Definitions and units of fluid pressure, pressure intensity and pressure head
	2ND	Concept of atmospheric pressure, gauge pressure
	3RD	Concept of vacuum pressure and absolute pressure
	4TH	Describe about Pressure measuring instruments
	5TH	Describe about Manometers: Simple and differential
3RD	1ST	Describe about Bourden tube pressure gauge
	2ND	Simple problems of Simple and differential manometer
	3RD	Simple problems of Bourden tube pressure gauge
	4TH	Definition of hydrostatic pressure
	5TH	Discuss about Total pressure and centre of pressure on immersed bodies
4TH	1ST	Numerical solved of Total pressure and centre of pressure on immersed bodies
	2ND	Discuss about Archimedis' principle
	3RD	Discuss about concept of buoyancy
	4TH	Discuss about metacentre
	5TH	Discuss about metacentric height
5TH	1ST	Discuss about the Concept of floatation
	2ND	Define fluid flow and Types of fluid flow
	3RD	Discuss about Continuity equation (Statement and proof for one dimensional flow)
	4TH	State & proof Bernoulli's theorem
	5TH	Applications and limitations of Bernoulli's theorem
6TH	1ST	Discuss about Venturi meter
	2ND	Simple numerical solved
	3RD	Discuss about pitot tube
	4TH	Simple numerical solved

	5TH	Definition of orifices, Orifice coefficients
7TH	1ST	Discuss Ce, Cv, Cd and relation among them
	2ND	Definition of pipe
	3RD	Discuss Flow through pipe
	4TH	Define laws of fluid friction
	5TH	Head loss due to friction: Darcy's formula
8TH	1ST	Continued
	2ND	Head loss due to friction: Chezy's formula
	3RD	Continued
	4TH	Problem solved
	5TH	Define Hydraulic gradient
9TH	1ST	Define total gradient line
	2ND	Define impact of jets
	3RD	Discuss about various types of impact of jets
	4TH	Discuss about Impact of jet on fixed and moving vertical flat plates
	5TH	Discuss about derivation of work done on series of vanes
10TH	1ST	Discuss about condition for maximum efficiency
	2ND	Discuss about Impact of jet on moving curved vanes
	3RD	Discuss about illustration using velocity triangles
	4TH	Discuss about derivation of work done, efficiency
	5TH	Problem solved
11TH	1ST	Problem solved
	2ND	Discuss about turbine and power plant
	3RD	Layout and features of hydroelectric power plant
	4TH	Definition and classification of hydraulic turbines
	5TH	Construction and working principle of Impulse turbine (Pelton wheel)
12TH	1ST	Continued
	2ND	Velocity triangle of a single bucket, work done and efficiency in Pelton wheel (Numerical Problems)
	3RD	Problem solved
	4TH	Problem solved
	5TH	Construction and working principle of Reaction turbine (Francis turbine)
13TH	1ST	Velocity triangle, work done and efficiency (Numerical Problems)
	2ND	Problem solved
	3RD	Construction and working principle of Kaplan turbine
	4TH	Definition and classification of pumps
	5TH	Discussion of old topic
14TH	1ST	Question practice & assignment
	2ND	Previous year question
	3RD	Problem solved

	4TH	Concept of multistage centrifugal pumps
	5TH	Discuss about Cavitation-Causes and its effect
15TH	1ST	Construction and working principle of single acting
	2ND	Construction and working principle of double acting reciprocating
	3RD	Continued
	4TH	Concept of slip and negative slip
	5TH	Previous year questions discussion

Learning Resources:

	Title of Book	Author
Text Books:	Fluid Mechanics and Hydraulic Machines	R K Bansal
	Hydraulics, Fluid mechanics and Fluid machines	S Ramamurthan
	Hydraulics and fluid mechanics including hydraulic machines	Modi and Seth
Reference	Fluid Mechanics and Machinery	C S P Ojha

Teaching Faculty

HOD(Mech)