Utkalmani Gopabandhu Institute of engineering, Rourkela
Department of mechanical Engineering

LESSON PLAN

Session :: Summer – 2024

Semester date::16/01/24 to 26/04/24

Course Type :: Theory

Semester/Branch :: 4Th Semester, Mechanical Engineering

Subject (with code) ::Fluid mechanics (Th-03)

Contact hours/week :: 4

Name of Faculty :: Kalebar Singh

Week	Class Day	Topics
1st	1st	Properties of fluid: Definition and units of fluid properties like density, Specific weight, specific volume and specific gravity.
	2nd	Numerical
	3rd	Definition and units of fluid properties such as viscosity, Kinematic viscosity.
	4th	Surface tension and capillarity
2nd	1st	Fluid pressure and its measurements Definitions and units of fluid pressure, pressure intensity and pressure head. Pascal's Law.
	2nd	Concepts of atmospheric, gauge, vacuum and absolute pressure.
	3rd	Pressure Measuring instruments: Manometers(simple, Differential and piezometers)
	4th	Numerical
3rd	1st	Numerical
	2nd	Mechanical Gauges(Bourdon's tube pressure gauge)
	3rd	Assignment Evaluation/Class Test
	4th	Hydrostatics

		Definition of hydrostatic pressure, total pressure and centre of pressure.
4th	1st	Total pressure and centre of pressure of immersed Horizontal bodies
	2nd	Numerical
	3rd	Total pressure and centre of pressure of immersed vertical bodies
	4th	Numerical
5th	1st	Concept of flotation, buoyancy, centre of buoyancy, Archimedes principle
	2nd	Meta centre and meta centric height
	3rd	Numerical
	4th	Quiz Test
6th	1st	Kinematics of Flow Types of fluid flow
	2nd	Continuity equation(statement and proof)
	3rd	Numerical
	4th	State and Prove Bernoulli's equation
7th	1st	Numerical
	2nd	Limitations of Bernoulli's theorem
	3rd	Numerical
	4th	Practical applications of Bernoulli's equation: Venturi-meter and Pitot tube.
8th	1st	Numerical
	2nd	Assignment Evaluation/Class Test
	3rd	Orifices, notches & weirs Definition of Orifice, Types
	4th	Orifice co-efficient and relationship among them.
9th	1st	Definition of notch and weir, Classifications of notches & weirs
	2nd	Discharge over a rectangular notch or weir.
	3rd	Numerical
	4th	Discharge over a triangular notch or weir

10th	1st	Numerical
	2nd	Flow through pipe: types of losses
	3rd	Types of losses Pipe losses
	4th	Darcy-Weisbach formula, Numerical
11th	1st	Chezy's formula for loss of head due to friction in pipes. Numerical
	2nd	Hydraulic Gradient Line and Total Energy Line.
	3rd	Numerical
	4th	Assignment Evaluation/Class Test
12th	1st	Impact of jets Force exerted by the Impact ofj et on a stationary vertical plate
	2nd	Numerical
	3rd	Force exerted by a jet on a moving Vertical flat plate
	4th	Numerical
13th	1st	Derivation of work-done on series of vanes and condition for maximum efficiency.
	2nd	Numerical
	3rd	Impact of jet on moving curved vanes, illustration using velocity triangles
	4th	Derivation of work done, efficiency.
14th	1st	Numerical
	2nd	Numerical
	3rd	Doubt clearing class
	4th	Assignment Evaluation/ Class Test
15th	1st	Revision
	2nd	Revision
	3rd	Discussion of previous year questions
	4th	Discussion of previous year questions

Learning Resources

1. Text Book of Fluid Mechanics by R.K.Bansal
2. Text Book of Fluid Mechanics by R.S khurmi
3. Text Book of Fluid Mechanics by R.K.Rajput
4. Text Book of Fluid Mechanics Modi & Seth