

DEPARTMENT OF CIVIL ENGINEERING

Lesson Plan for the Session FEB-JUN 2025-26 (Even Semester)

Faculty Name: Puneeth K

Subject with code: Fluid Mechanics & Hydraulics (BCV402)

Semester with section: 4th Sem, 'A'

Class No.	MODULE NO.	Topics to be covered	% Coverage
1	1	Introduction to Syllabus	20
2		Fluid & their Properties (Density, unit weight, Specific gravity)	
3		Problems on Fluid Properties: Density, unit weight, Specific gravity	
4		Fluid Properties: Vapor pressure & Newton's law of viscosity	
5		Problems on Newton's law of viscosity	
6		Pascal's law & its Derivation	
7		Measurement of pressure using Manometer (U-tube, Differential, inverted) – Theory with problems	
8		Measurement of pressure using Manometer (U-tube, Differential, inverted) – Theory with Problems	
9		Measurement of pressure using Manometer (U-tube, Differential, inverted) – Theory with Problems	
10		Total pressure and centre of pressure on vertical plane– Theory & Derivation	
11		Total pressure and centre of pressure on inclined plane– Theory & Derivation	
12		Problems on Total pressure and centre of pressure	
13	2	Types of fluid flow & Derivation of continuity equation in Cartesian coordinates	40
14		Problems on Continuity equation	
15		Problems on Continuity equation	
16		Concept of Flow nets	
17		Derivation of Euler's equation of motion and Bernoulli's equation	
18		Problems on Bernoulli's equation	
19		Application - Venturimeter, Orificemeter, Pitot tube	
20		Derivation of Venturimeter discharge equation	
21		Problems on Venturimeter	
22	3	Classification of orifice, mouth piece and Hydraulic coefficients	60
23		Problems on Hydraulic co-efficients	
24		Discharge over Rectangular, Triangular and Cipoletti notch - Derivations	
25		Problems on Rectangular, Triangular and Cipoletti notch	
26		Problems on Rectangular, Triangular and Cipoletti notch	
27		IA-1 Scheme Discussion	
		Flow through pipes-Major and minor losses – Conditions & Equations	
28		Problems on Major and minor losses	
29	Pipes in series & parallel – Equations & Problems		

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30		Concept of water hammer & surge tanks	
31	4	Classification of Flow through channels	80
32		Derivation of most economical channel sections: Rectangular, Triangular, Circular	
33		Derivation of most economical channel sections: Rectangular, Triangular, Circular	
34		Problems on most economical channel sections: Rectangular, Triangular, Circular	
35		Problems on most economical channel sections: Rectangular, Triangular, Circular	
36		Concept of Uniform flow & Specific energy	
37		Specific energy (Derivation & problems)	
38		Hydraulic jump (Derivation & Problems)	
39		GVF equation (Derivation & Problems)	
40		5	
41	Impact of jet on stationary and moving curved vanes – (Derivations & Problems)		
42	IA 2 – Scheme Discussion		
43	Impact of jet on stationary and moving curved vanes – (Derivations & Problems)		
44	Pelton wheel (components & concept of velocity triangle)		
45	Problems on Pelton wheel		
46	Reaction & Francis turbine - Working proportions		
47	Reaction & Francis turbine - Working proportions		
48	Reaction & Francis turbine - Working proportions		
49	Centrifugal Pumps – Components & Work done		
50	Centrifugal Pumps – Efficiency & Multistage pumps		

List of Text Books

1. P. N. Modi and S. M. Seth-Hydraulics and Fluid Mechanics, including Hydraulic machines, standard Book House, New Delhi
2. K Subramanya- Fluid Mechanics and Hydraulic Machines, Tata McGraw-Hill, New Delhi
3. R.K. Bansal- A text book of Fluid Mechanics and Hydraulic Machines- Laxmi Publications, New Delhi

List of Reference Books

1. Victor L. Streeter, Benjamin Wyile E and Keith W. Bedford- Fluid Mechanics, Tata McGraw Hill publishing Co Ltd, New Delhi
2. J. F. Douglas, J. M. Gasoreik, John Warfield, Lynne Jack – Fluid Mechanics, Pearson, Fifth edition.
3. K. Subramanya- Fluid Mechanics and Hydraulic Machines, Problems and Solutions, Tata McGraw Hill, New Delhi
4. S. K SOM and G. Biswas – “Introduction to Fluid Mechanics and Fluid Machines, Tata Mcg raw Hill, New Delhi