Name of the Faculty :

Discipline : **Civil Engg.**

Semester : **3 rd Sem.**

Subject : **FLUID MECHANICS**

Lesson Plan Duration : **15 weeks**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
1.	1	1. Introduction: 1.1 Fluids: Real and ideal fluids 1.2 Fluid Mechanics, Hydrostatics, Hydrodynamics, Hydraulics	1.	Brief Introduction of Practicals.
	2.	2. Properties of Fluids (definition only 2.1Mass density, specific weight, specific gravity, viscosity, surface tension - cohesion, adhesion and, capillarity, vapour pressure and compressibility		
	3.	DO		
2.	1.	3. Hydrostatic Pressure: 3.1 Pressure, intensity of pressure , pressure head,	2.	1 To verify Bernoulli's Theorem
	2.	Pascal's law and its applications.		
	3.	3.2 Total pressure, resultant pressure, and centre of pressure.		
3.	1.	3.3Total pressure and centre of pressure on horizontal, vertical and inclined plane surfaces of rectangular, triangular, trapezoidal shapes and circular.(No derivation - Simple Numerical Problems)	3.	DO
	2.	DO		
	3.	4. Measurement of Pressure 4.1 Atmospheric pressure, gauge pressure,		
4.	1.	Vacuum pressure and absolute pressure.	4.	2 To find out venturimeter coefficient
	2.	4.2 Piezometer, simple manometer and differential manometer		
	3.	Bourden gauge and dead weight pressure gauge.		

5.	1.	REVISION	5.	DO
	2.	FIRST SESSIONAL		
	3.	5. Fundamentals of Fluid Flow: 5.1 Types of Flow: Steady and unsteady flow, laminar and turbulent flow, uniform and non-uniform flow		
6.	1.	5.2 Discharge and continuity Equation (flow equation) {No derivation}, Simple numerical problems. Equation (flow equation) {No derivation}, Simple numerical problems.	6.	3 To determine coefficient of velocity (C_v), Coefficient of discharge (C_d) Coefficient of contraction (C_c) of an orifice and verify the relation between them
	2.	5.3 Types of hydraulic energy: Potential energy, kinetic energy, pressure energy		
	3.	5.4 Bernoulli's theorem; statement and description (without proof of theorem), Simple numerical problems.		
7.	1.	6. Flow Measurements Brief description with simple numerical problem of 6.1:Venturimeter and orifice meter	7.	DO
	2.	6.2 Pitot tube 6.3 Orifices and mouthpieces		
	3.	6.4 Current meters 6.5 Notches and weirs		
8.	1	7. Flow through Pipes: 7.1 Definition of pipe flow; Reynolds number, laminar and turbulent flow - explained through Reynold's experiment	8.	4 To perform Reynold's experiment
	2.	7.2 Critical velocity and velocity distributions in a pipe for laminar flow		
	3.	7.3 Head loss in pipe lines due to friction, sudden expansion and sudden contraction, entrance, exit, obstruction and change of direction (No derivation of formula), Simple numerical problems		
9.	1.	7.4 Hydraulic gradient line and total energy line	9.	To verify loss of head in pipe flow due to a)Sudden enlargement b)Sudden contraction c)Sudden bend

	2.	7.5 Pipes in series and parallel		
	3.	7.6 Water hammer phenomenon and its effects (only definition and description)		
10.	1.	REVISION	10.	DO
	2.	SECOND SESSIONAL		
	3.	8. Flow through open channels: 8.1 Definition of an open channel, uniform flow and non-uniform flow		
11.	1.	8.2 Discharge through channels using i) Chezy's formula (no derivation)	11.	6)Demonstration of use of current meter and pitot tube
	2.	ii) Manning's formula (no derivation)		
	3.	8.3 Most economical channel sections (no derivation, only simple numerical problems) i)Rectangular ii)Trapezoidal		
12.	1.	DO	12.	DO
	2.	REVISION		
	3	8.4 Head loss in open channel due to friction		7)To determine coefficient of discharge of a rectangular notch and triangular notch
13.	1.	9.Hydraulic Pumps: Hydraulic pump	13.	DO
	2.	Reciprocating pump,		
	3.	centrifugal pumps (No numerical and derivation (may be demonstrated with the help of working models)		
14.	1.	REVISION	14.	REVISION
	2.	REVISION		
	3.	THIRD SESSIONAL		
15.	1.	PREPARATION OF FINAL EXAM	15.	
	2.	DO		
	3.	DO		