GOVT. POLYTECHNIC SIRSA

LESSON PLAN

Name of the Faculty : AARTI ARORA
Discipline **:**CIVIL ENGG.
Semester **:**3 rd
Subject **:**FLUID MECHANICS
Lesson Plan Duration:15 WEEKS (FROM 7 SEP TO 24 DEC 2020)

Week		Theory		Practicals
	Lecture Day	**Topic (including assignment/test)**	**Practical Day**	**Topic**
1st	1st	Introduction: Fluids: Real and ideal fluids Fluid Mechanics, Hydrostatics, Hydrodynamics, Hydraulics	1	To verify Bernoulli's Theorem
	2nd	Properties of Fluids (definition only)Mass density, specific weight, specific gravity, viscosity,		
	3rd	surface tension - cohesion, adhesion and, capillarity, vapour pressure and compressibility		
2nd	4th	Units of measurement and their conversion	2	To find out venturimeter coefficient
	5th	Hydrostatic Pressure: Pressure, intensity of pressure, pressure head, Pascal's law and its applications.		
	6th	Total pressure, resultant pressure, and center of pressure.		
3rd	7th	Total pressure and center of pressure on horizontal, vertical and inclined plane surfaces of rectangular,	3	To determine coefficient of velocity (Cv)
	8th	triangular, trapezoidal shapes and circular. (No derivation)		
	9th	Measurement of Pressure: Atmospheric pressure, gauge pressure, vacuum pressure and absolute pressure.		

4th	10th	Revision/Assignment	4	Coefficient of discharge (Cd)
	11th	Piezometer, simple manometer and differential manometer,		
	12th	Bourden gauge and dead weight pressure gauge.		
5th	13th	Fundamentals of Fluid Flow:Types of Flow: Steady and unsteady flow, laminar and	5	Coefficient of contraction (Cc) of an orifice and verify the relation between them
	14th	turbulent flow,uniform and non-uniform flow		
	15th	Discharge and continuity equation (flow equation) {No derivation}		
6th	16th	Types of hydraulic energy: Potential energy, kinetic energy, pressure energy	6	To perform Reynold's experiement
	17th	Bernoulli's theorem; statement and description (without proof of theorem)		
	18th	simple numerical problems.		
7th	19th	6. Flow Measurements (brief description with simple numerical problems)	7	To verify loss of head in pipe flow due to a) Sudden enlargement
	20th	Venturimeter and mouthpiece		
	21st	Pitot tube Orifice and Orificemeter		
8th	22nd	Current meters	8	b) Sudden contraction
	23rd	Notches and weirs (simple numerical problems)		
	24th	7. Flow through Pipes:Definition of pipe flow; Reynolds number, laminar and turbulent flow - explained through Reynold's experiment		
9th	25th	Critical velocity and velocity distributions in a pipe for laminar flow	9	c)Sudden bend
	26th	Head loss in pipe lines due to friction, sudden expansion and sudden contraction, entrance, exit,		

	27th	obstruction and change of direction (No derivation of formula)		
10th	28th	Hydraulic gradient line and total energy line	10	vi) Demonstration of use of current meter and pitot tube
	29th	Flow from one reservoir to another through a long pipe of uniform cross section (simple problems)		
	30th	Pipes in series and parallel		
11th	31st	Revision/Assignment	11	To determine coefficient of discharge of a rectangular notch/triangular notch.
	32nd	Water hammer phenomenon and its effects (only definition and description)		
	33rd	8. Flow through open channels:		
12th	34th	Definition of an open channel, uniform flow and non-uniform flow	12	viva-voice
	35th	Discharge through channels using i) Chezy's formula (no derivation)		
	36th	Manning's formula (no derivation) Simple Numerical Problems		
13th	37th	Most economical channel sections (no derivation)	13	viva-voice
	38th	Rectangular ii) Trapezoidal		
	39th	iii) Simple Numerical Problems		
14th	40th	Head loss in open channel due to friction	14	viva-voice
	41st	Hydraulic Pumps:		
	42nd	reciprocating pump,		
15th	43rd	centrifugal pumps	15	viva-voice
	44th	Revision		
	45th	Revision		