

Semester: 4 th Subject:		Fluid Mechanics-II (PC/CE/6-T)	
Week	Lec. Day	Topics	Remarks
1 st	1.	Flow through pipes: Types of flows-Reynold's experiment, shear stress on turbulent flow,	
	2.	boundary layer in pipes-Establishment of flow, velocity distribution for turbulent flow in smooth and rough pipes,	
	3.	resistance to flow of fluid in smooth and rough pipes, Stanton and Moody's diagram	
2 nd	4.	Darcy's Weisbach equation,	
	5.	other energy losses in pipes, loss due to sudden expansion,	
3 rd	6.	hydraulic gradient and total energy lines,	
	7.	pipes in series and in parallel, equivalent pipe, branched pipe,	
	8.	pipe networks, Hardy Cross method, water hammer.	
4 th	9.	Boundary layer analysis: Boundary layer thickness, boundary layer over a flat plate	
	10.	laminar boundary layer, turbulent boundary layer,	
	11.	laminar sub-layer, smooth and rough boundaries,	
	12.	local and average friction coefficient, separation and its control.	
5 th	13.	Flow in Open Channels: Difference between pipe flow and channel flow, Types of channels, Classification of flows,	
	14.	Sub Critical and Supercritical Flows, Velocity distribution in channel.	
	15.	Flow Measurement: Flow over notches and weirs, Pitot tube floats and current meters for velocity measurement,	
6 th	16.	Flow over Spillways, Sluice gates, Free over fall flow.	
	17.	Unsteady flow and Hydraulic jump: Froude number and types of hydraulic jump,	
	18.	Applications Jumps in channels. Unsteady flow equation, Pre jump and post jump depths,	
7 th		MINOR TEST I	
8 th	19.	length of Hydraulic Jump and energy dissipation, Surges	
	20.	Concepts of Specific energy and specific Force: Specific energy and specific curve,	
	21.	Momentum Equation in open channels,	
9 th	22.	Specific force & specific force curve,	
	23.	Critical depth and its computation.	
	24.	Gradually Varied Flow: Channel transitions, non-uniform flow in open channels,	
10 th	25.	Dynamic equation for GVF,	
	26.	Water surface profiles in channels of different slopes GVF flow computations.	
	27.	Design of Channels, most efficient channel sections	
11 th	28.	Pumps and Turbines: Reciprocating pumps, their types	
	29.	work done by single and double acting pumps.	
	30.	Centrifugal pumps, components and parts and working,	
12 th	31.	types, heads of a pump-statics and manometric heads.	
	32.	Force executed by fluid jet on stationary and moving flat vanes,	
	33.	Turbines-classifications of turbines based on head	
13 th	34.	Turbines-classifications of turbines based on specific speed,	
	35.	component and working of Pelton wheel	
	36.	component and working of Francis turbines	
14 th		MINOR TEST II	
15 th	37.	Efficiency and power	
	38.	Cavitation and setting of turbines	
	39.	Numerical Problems	