B. Tech 3rd Semester (Mechanical Engineering)	
Lesson Plan: Fluid Mechanics and Fluid Machines (PCC-ME-303/21)	
Lecture: 03	Tutorial: 01
Lecture No.	**Topics**
Unit 1	
1	General Discussion about Fluid Mechanics
2	Definition of fluid, properties of fluids
3	Newton's law of viscosity, Control volume
4	Types of Fluids, Basic laws of fluid mechanics
5	Buoyancy and Flotation
6	Stability Conditions, metacentic height and its determination
Unit 2	
7	Types of Fluid Flow, continuity equation
8	Euler's Equation,
9	Bernoulli's equation, momentum equation
10	Venturimeter, Orificemeter
11	Numericals on Venturimeter
12	Numericals on Bernoullis theorem, Effect of free surface on metacentre
Unit 3	
13	Major and Minor losses in pipe
14	Reynolds experiment, Laminar flow between two parallel plates
15	Laminar flow between two parallel plates, Laminar Flow through a circular pipe
16	Couette Flow, Numericals on Laminar Flow
17	concept of boundary layer, measures of boundary layer thickness, displacement thickness
18	Momentum Thickness and Energy thickness, determine boundary layer thickeness, Von Karman Integral Momentum Equation
19	Numericals from boundary Layer and Pipe losses
20	Numericals from boundary Layer and Pipe losses
Unit 4	
21	Introduction to Dimensional Analysis, Dimensions, Homogeneous equations, Rayleigh's Method

22	Buckingham Pi Method
23	Model Testing, Simlitude
24	Numericals on Simlitude and Simlitude Laws
25	Model Testing of Turbines and pumps, Numericals
26	Unit Quantities, Numericals on Unit quantities
Unit 5	
27	Intoduction to Turbines, Components of Hydropower Plant, Different types of heads
28	Losses in Turbines, Efficiencies of Turbines, Introduction to Impulse Turbine
29	Working of Impulse Turbine, Components of Pelton Turbines, Bucket Dimensions
30	Efficiency of a Pelton wheel; design aspects; speed ratio; flow ratio; jet ratio; number of jets; number of buckets and working proportions; Energy conversion
31	Advantages, disadvantages, use and limitations of different turbines, Component parts; construction and operation of a Francis turbine;
32	Work done by the turbine runner; working proportions and design parameters; slow; medium and fast runners;
33	Draft tube - its function and different forms
34	Component parts; construction and operation of a Propeller; Kaplan turbine; Characteristics of governing mechanism,
35	Governing of impulse and reaction turbine
36	Performance Charactristics of Impulse and Reaction turbines
Unit 6	
37	Introduction of Centrifugal Pump; Working and components; Classification;velocity diagrams and work done; vane shape; Losses and
38	minimum starting speed; cavitation and maximum suction lift; net positive suction head; Design consideration, Performance Curves
39	Construction and operational details of Reciprocating Pump; discharge coefficient; Centifugal Pump V/S reciprocating pump; volumetric efficiency and
40	Effect of piston acceleration and friction on indicator diagram (pressure – stroke length plot);
41	General Discussion regarding the subject, Exit Survey