MERI College of Engineering and Technology
(MERI - CET)

Lesson Plan

Name of the Faculty : Mr. Deepak Anand
Discipline : Mechanical Engineering
Semester : 4th
Subject : Fluid Mechanics (PCC-ME-204G)
Lesson Plan Duration : 15 Weeks (from April 2021 to July 2021)
** Work Load (Lecture) per week (in hours): Lectures-03, Practicals-02 (Group-A & Group-B)

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/test)	Practical day	Topic
1st	1st	Fluid Properties & Fluid Statics: Concept of Fluid & Flow, Ideal & Real Fluids.	1st	To determine the coefficient of impact for vanes. (Group-A)
	2nd	Continuum Concept and Properties of Fluids.	2nd	To determine the coefficient of impact for vanes. (Group-B)
	3rd	Newtonian & Non-Newtonian Fluids, Pascal's Law.		
2nd	4th	Hydrostatic Equation, Hydrostatic Forces on Plane & Curved Surfaces.	3rd	To determine coefficient of discharge of an orificemeter. (Group-A)
	5th	Stability of Floating & Submerged Bodies, Relative Equilibrium.	4th	To determine coefficient of discharge of an orificemeter. (Group-B)
	6th	Numerical Problems.		

3rd	7th	Fluid Kinematics: Eulerian & Lagrangian Description of Fluid Flow.	5th	To determine the coefficient of discharge of Notch (V and Rectangular types). (Group-A)
	8th	Stream, Streak & Path Lines, Types of Flows.	6th	To determine the coefficient of discharge of Notch (V and Rectangular types). (Group-B)
	9th	Flow Rate & Continuity Equation, Differential Equation of Continuity in Cylindrical & Polar Coordinates.		
4th	10th	Rotation, Vorticity & Circulation.	7th	To determine the friction factor for the pipes. (Group-A)
	11th	Stream & Potential Functions, Flow Net.	8th	To determine the friction factor for the pipes. (Group-B)
	12th	Numerical Problems.		
5th	13th	Fluid Dynamics: Concept of System & Control Volume.	9th	To determine the coefficient of discharge of Venturimeter. (Group-A)
	14th	Euler's Equation, Bernoulli's Equation.	10th	To determine the coefficient of discharge of Venturimeter. (Group-B)
	15th	Venturimeter, Orifices, Orificemeter.		
6th	16th	Mouthpieces, Kinetic & Momentum Correction Factors.	11th	To determine the coefficient of discharge, contraction & velocity of an orifice. (Group-A)

	17th	Impulse-Momentum Relationship and its Applications.		
	18th	Numerical Problems.	12th	To determine the coefficient of discharge, contraction & velocity of an orifice. (Group-B)
7th	19th	Compressible Fluid Flow: Introduction, Continuity, Momentum & Energy Equation.	13th	To verify the Bernoulli's Theorem. (Group-A)
	20th	Sonic Velocity, Propagation of Elastic Waves due to Compression of Fluids.	14th	To verify the Bernoulli's Theorem. (Group-B)
	21st	Propagation of Elastic Waves due to Disturbance in Fluids, Stagnation Properties.		
8th	22th	Isentropic Flow, Effect of Area Variation on Flow Properties.	15th	To find critical Reynold's number for a pipe flow. (Group-A)
	23rd	Isentropic Flow through Nozzles.	16th	To find critical Reynold's number for a pipe flow. (Group-B)
	24th	Diffusers, Injectors.		
9th	25th	Numerical Problems.	17th	To determine the meta-centric height of a floating body. (Group-A)
	26th	Viscous Flow: Flow Regimes & Reynold's Number.	18th	To determine the meta-centric height of a floating body. (Group-B)
	27th	Relationship between Shear Stress & Pressure Gradient.		
10th	28th	Uni-directional flow between Stationary & Moving Parallel plates.	19th	To determine the minor losses due to sudden enlargement, sudden contraction & bends. (Group-A)
	29th	Movement of piston in a Dashpot.		

	30th	Power absorbed in bearings.	20th	To determine the minor losses due to sudden enlargement, sudden contraction & bends. (Group-B)
11th	31st	Numerical Problems.	21st	To show the velocity & pressure variation with radius in a forced vortex flow. (Group-A)
	32nd	Flow through Pipes: Major & Minor Losses in pipes, Hagen's Poiseuilli Law.	22nd	To show the velocity & pressure variation with radius in a forced vortex flow. (Group-B)
	33rd	Hydraulic gradient and Total Energy Lines, Series & Parallel Connection of pipes.		
12th	34th	Branched pipes, Equivalent pipes, Power transmission through pipes.	23rd	To verify the momentum equation. (Group-A)
	35th	Numerical Problems.	24th	To verify the momentum equation. (Group-B)
	36th	Boundary Layer Flow: Boundary Layer Concept, Displacement, Momentum & Energy Thickness.		
13th	37th	Von-Karman Momentum Integral Equation, Laminar & Turbulent Boundary Layer flows.		
	38th	Drag on a Flat plate, Boundary Layer Separation & Control.		
	39th	Streamlined & Bluff Bodies.		
14th	40th	Lift & Drag on a Cylinder and an airfoil.		
	41th	Numerical Problems.		
	42nd	Turbulent Flow: Shear Stress in Turbulent Flow.		
15th	43rd	Prandtl Mixing Length Hypothesis.		

	44th	Hydraulically Smooth & Rough Pipes, Velocity Distribution in pipes, Friction Coefficients for Smooth & Rough pipes.		
	45th	Numerical Problems.		