

TEACHING PLAN FOR THEORY

Subject Teacher: Mr. O.R.Ukarde

Subject: 301005: Fluid Mechanics-II Class: TE (B)			Branch: Civil	Year 2017-2018
Lecture No	Scheduled Date	Topics to be covered on the scheduled date		
		Syllabus Discussion, Discussion on course objective & course outcome		
Unit-1: (08 Hrs)				
1	16/6/2017	Practical problems involving fluid flow around submerged objects		
2	19/6/2017	Definitions and expressions for drag, lift, drag coefficient, lift coefficient, types of drag.		
3	20/6/2017	Drag on sphere, cylinder, flat plate and Aerofoil, Karman's vortex street, Effects of free surface and compressibility on drag		
4	21/6/2017	Development of lifts, Lift on cylinder and Aerofoil, Magnus effect, Polar diagram.		
5	23/6/2017	Types of unsteady flow; Flow through openings under varying head		
6	27/6/2017	Fluid compressibility, Celerity of elastic pressure wave through fluid medium;		
7	28/6/2017	Water hammer phenomenon; Rise of pressure due to water hammer		
8	30/6/2017	Surge Tanks and their functions.		
Unit II : (08 Hrs)				

1	3/7/2017	Classification of channels, and Channel flows. Basic governing equations of Channel flow viz.
2	4/7/2017	continuity equation, energy equation and momentum equation, One dimensional approach
3	5/7/2017	Geometric elements of channel, Velocity distribution in open channel flow
4	7/7/2017	Introduction to notches and weirs ((Rectangular, Triangular, Trapezoidal). .
5	10/7/2017	Specific energy, Specific force Specific energy diagram, Specific force diagram, Depth discharge Diagram,
6	11/7/2017	Critical depth, Conditions for occurrence of critical flow; Froude's number, .
7	12/7/2017	Flow classification based on it, Important terms pertaining to critical flow viz. section factor
8	14/7/2017	concept of first hydraulic exponent; Critical flow computations; channel transitions
Unit-III: (08 Hrs)		
1	17/7/2017	Characteristics and establishment of uniform flow, uniform flow formulae :Chezy's and Manning's formulae;
2	18/7/2017	Factors affecting Manning's roughness coefficient; Important terms pertaining to uniform flow
3	19/7/2017	viz. normal depth, conveyance, section factor, concept of second hydraulic exponent,
4	21/7/2017	Uniform flow computations. Most efficient channel sections (rectangular, triangular, trapezoidal and circular)
5	24/7/2017	Phenomenon of hydraulic jump; Location and examples of occurrence of hydraulic jump; Assumptions in the theory of hydraulic jump

6	25/7/2017	Application of momentum equation to hydraulic jump in rectangular channel: Conjugate depths and relations between conjugate depths
7	26/7/2017	Energy dissipation in hydraulic jump; Graphical method of determination of energy dissipation,
8	28/7/2017	Classification of hydraulic jump; Practical uses of hydraulic jump, venture flume, standing wave flume

UNIT IV: (08 Hrs)

1	31/7/2017	Force and work done due to impact of jet on stationary and moving
2	1/8/2017	flat and curved surfaces using linear momentum principle.
3	2/8/2017	: General classification of pumps, Centrifugal pumps- Classification,
4	4/8/2017	, theory working, Selection of pumps,
5	7/8/2017	Centrifugal head, Work done by impeller, Heads and efficiencies,
6	8/8/2017	minimum starting speed, Cavitation in centrifugal pumps
7	9/8/2017	multistage pumping, Introduction to submersible pumps
8	11/8/2017	reciprocating pumps,,

Unit V : (08 Hrs)

1	14/8/2017	Elements of hydropower plant; hydraulic turbines- Classification, heads and efficiencies
2	16/8/2017	Design and governing of Pelton Wheel
3	18/8/2017	, Francis turbine-parts and working.
4	21/8/2017	Cavitation in hydraulic turbines-
5	22/8/2017	Prediction of performance in terms of unit quantities
6	23/8/2017	specific quantities, Specific speed, Characteristic curves
7	28/8/2017	Dimensional analysis as applied to hydraulic turbines
8	29/8/2017	selection of turbines
UNIT VI: (08 Hrs)		
1	30/8/2017	Definition and types of non-uniform flow; Gradually Varied Flow (GVF) and Rapidly Varied Flow (RVF)
2	1/9/2017	Basic Assumptions of GVF; Differential equation of GVF -
3	4/9/2017	Alternative forms; Classification of channel bed slopes
4	5/9/2017	Various GVF profiles, their general characteristics and examples of their occurrence; Control section
5	6/9/2017	Methods of GVF computations
6	8/9/2017	Direct Step method, Graphical Integration method

7	11/9/2017	Standard Step method,
8	12/9/2017	VenTe Chow method