

STAFF TEACHING PLAN (2021-22)

IInd Year B.E. (IV th Sem ) Mechanical Engineering

Subject : Fluid Mechanics & Hydraulic Machine

Subject Teacher: Dr. S.R. Ikhar

Sr No	Unit	Topic	Expected Date	Topic Description
1	I	101		Fluid Properties: Types of fluids, Mass Density, Specific weight, specific gravity, numerical
2	I	102		Newton's Law of viscosity, Dynamic viscosity, Kinematic viscosity
3	I	103		Surface Tension, Compressibility
4	I	104		Capillarity, vapour pressure
5	I	105		Fluid Kinematics; Types of flow –steady, unsteady, uniform, non-uniform, laminar, turbulent, one , two and three dimensional, compressible, incompressible, rotational, irrotational flow
6	I	106		Fluid Statics: Pressure, measurement of pressure, using manometers, Hydrostatic law, Pascal's law
7	I	107		Buoyancy & Flotation, Metacentric height, Numerical on metacentric height
8	I	108		Stability of floating and submerged bodies
9	I	109		Total pressure, centre of pressure, pressure on a plane (horizontal, vertical).
10	I	110		Inclined & Curved surfaces
11	II	201		Fluid dynamic: Introduction to Navier-Stroke's equation, Euler equation of motion along a stream line
12	II	202		Bernoulli's equation for ideal fluid
13	II	203		Bernoulli's equation for real fluid
14	II	204		Application of bernoulli's equation Venturi meter
15	II	205		Orifices meter
16	II	206		Pitot tube.
17	II	207		Laminar and Turbulent flow: definition Relation between pressure and shear stresses
18	II	208		Laminar flow through round pipe
19	II	209		Turbulent flow and velocity distribution
20	II	210		Introduction to similitude & model testing
21	III	301		Energy losses through pipe, Darcy- Weisbach equation, Chezy's equation
22	III	302		Minor losses in pipes
23	III	303		TEL, HGL, Equivalent pipe
24	III	304		Pipes in series
25	III	305		Siphons
26	III	306		Transmission of power & efficiency through pipe
27	III	307		Dimensional analysis, Dimensional Homogeneity
28	III	308		Rayleigh method & numerical
29	III	309		Buckingham's pi theorem
30	III	310		Numericals on Buckingham's pi theorem
31	IV	401		Elements of Hydro-Electic power plant, turbo machine and their classification
32	IV	402		Impulse Turbine :- Principal, Pelton wheel

33	IV	403		Velocity diagram and analysis
34	IV	404		Working proportions, design parameters
35	IV	405		Reaction or pressure turbine :- Principles of operation
36	IV	406		Degree of reaction, comparison over Pelton turbine
37	IV	407		Propeller turbine , Kaplan turbine:- Types constructional features
38	IV	408		Working proportions, design parameters, performance characteristics
39	IV	409		Governing of turbines
40	IV	410		Selection of turbines
41	V	501		Hydrodynamic pumps :- Centrifugal pumps principle of operation, classification, component of centrifugal pump
42	V	502		Priming methods, fundamental equation, various heads, velocity heads
43	V	503		Velocity triangles and their analysis, slip factor, effect of outlet blade angle, vane shapes
44	V	504		Losses and efficiencies of pumps, multi staging of pumps, design consideration
45	V	505		Positive displacement pumps :- Basic principle, classification
46	V	506		Slip, work done
47	V	507		Indicator diagram
48	V	508		Numerical on Acceleration of Head
49	V	509		Cavitations, Air vessels
50	V	510		Numerical on Air Vessels

**(Dr. S.R. Ikhar)**

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