

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma In Fire Technology

Semester: III

Subject Name: Hydraulic & Pumps

Sr. No.	Course Content
1	1.1 Hydraulics :- 1.1.1 The flow of water through open channels 1.1.2 Measures of flow 1.1.3 Pressure and pressure drop 1.1.4 Pipes hoses and nozzle. 1.2 Kinetics of fluid flow :- 1.2.1 Types of flow 1.2.2 Equation of continuity 1.2.3 One dimensional method of flow
2	2.1 Dynamics of fluid flows :- 2.1.1 Energies potential pressure & kinetic momentum & energy equation for steady flow 2.1.2 Bernoulli's theorem & its application 2.2 Fluid measurement :- 2.2.1 Pressure measurements 2.2.2 Use of piezometers and static meter 2.2.3 Velocity measurement 2.2.4 Current meter 2.2.5 Discharge measurement.
3	3.1 Flows in pipes : 3.1.1 Friction losses in pipes 3.1.2 loses due to sudden enlargement and contraction 3.1.3 hydraulic and energy grade lines siphon 3.1.4 pipes in series and parallel 3.1.5 use of moody's charts 3.1.6 Branching of pipes 3.1.7 pipes networks 3.1.8 water hammer problems.
4	4.1 Principles of hydraulics machinery 4.2 Dynamic section of fluid dynamic force & torque executed by fluid jet on plan 4.3 curve stationary & moving vanes 4.4 velocity diagrams 4.5 work done by impact pressure due to deviated flow
5	5.1 Pumps (Positive Displacement), 5.2 Reciprocating pump-basic theory –types-construction 5.3 Centrifuges pumps & its characteristics 5.4 Pumps section, maintenance & application

Practical :

1. To Study the types of fluid flow
2. To determine metacentric height of a floating body
3. Verification of Bernoulli's equation.
4. To determine the co-efficient of viscosity of a given fluid.
5. Measurement of flow rate and discharge co-efficient by venturimeter.
6. Study of 'V' notch and measurement of discharge through rectangular notch.
7. Study of rectangular notch and measurement of discharge through rectangular notch
8. To find out the frictional factor of flow through pipe.
9. To determine efficiency of a centrifugal pump and construct its performance curve.
10. Study and measurement of efficiency of reciprocating pumps
11. Impact of jet and study of Pelton wheel.
12. Study of Hydraulic coupling & torque converter.
13. Study of Pitot tube & measurement of flow velocity
14. Study of types of pressure & its calibration by U – tube manometer
15. Study of flow through compound pipes
16. Study of flow through parallel pipes.

REFERENCES BOOKS:

1. Fluid Mechanics & Hydraulic Mechanics -- R.K. Bansal
2. A text book of hydraulics -R.S. Khurmi