C.U.SHAH UNIVERSITY – Wadhwan City

FACULTY OF: - Technology and Engineering (Diploma Engineering)
DEPARTMENT OF: - Mechanical Engineering
SEMESTER: - III **CODE**: 2TE03FMS1
NAME OF SUBJECT – Fluid Mechanics

Teaching & Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme					Evaluation Scheme							
							Theory				Practical (Marks)			Total
							Sessional Exam		University Exam		Internal		University	
		Th	Tu	Pr	Total	Credit	Marks	Hours	Marks	Hours	Pr/ Viva	TW	Pr	
2TE03FMS1	Fluid Mechanics	04	00	02	06	05	30	1.5	70	03	30	20	----	150

Objective:-

Fluids Mechanics is branch of science which deals with the behaviour of fluid at rest as well of motion and subsequent effects. The numbers of fluid in engineering applications are enormous. Applications encompasses various engineering uses like water flow in pumps, turbines, flow through pipes, ships, etc. in addition to other applications like in breathing, blood flow, etc.

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	**Introduction:** Introduction, Solids, Liquids and Gases, Concept and classification of Fluid. Properties of fluid	06
2	**Fluid Statics:** Introduction, Pascal's Law, Pressure-Density-Height Relationship, Pressure Variation in Compressible and Incompressible Fluid, Hydrostatics Forces on Submerged Horizontal Plane Surface and Vertical Plane surface.	08
3	**Fluid kinematics:** Introduction, Classification of Fluid Flows Streamlines, Path lines and Streak lines.	06
4	**Fluid Dynamics:** Introduction, Control volume and Control Surface, Energy and Its Forms, Euler's Equation, Bernoulli's Theorem, Principal of Energy Conservation, Bernoulli's Theorem from Steady Flow Energy.	08
5	**Fluid Measurements:** Introduction, Density and Specific Gravity Measurements, Liquid Level Measurements, Viscosity Measurements, Pressure Measurements, Velocity Measurements, Flow Measurements, Orifices and Mouthpiece, Notches and Weirs.	10
6	**Impact of Jet:** Introduction, Impulse-momentum Principle, Jet Impingement upon a Stationary Flat Plate, Moving Flat Plate, Hinged Plate, Jet Propulsion of Ships.	09
7	**Hydraulic Pump and Hydraulic Systems:** Centrifugal and Reciprocation Pump, Bernoulli's Theorem from Steady Flow Energy, Priming, Hydraulic Accumulator, Hydraulic Intensifier, Hydraulic Crane, Hydraulic Life, Hydraulic Press, Hydraulic Ram.	09

List of Experiments:-

- Measure fluid flow by Venturimeter.
- Measure fluid flow by Orifice meter.
- Measure fluid flow by V-Notch.
- Measure fluid flow by Rectangular Notch.
- Measure fluid flow by Nozzles.
- Verify Bernoulli's theorem.
- Determine friction head losses through pipes
- Perform testing of Centrifugal pump as per BIS.
- Perform testing of Reciprocating pump as per BIS
- Perform testing of Pelton wheel.
- Industrial visit and report.

Books Recommended:-

- Fundamentals of Fluid Mechanics, Dr.D.S.Kumar Katson(in S.I. Units), Pub. House.
- Fluid Mechanics & Hydraulic Machines,R.S.Khurmi S.Chand(In S.I.Units) & Co.Ltd.
- Hydraulic Machines &Fluidics, Dr.Jagdishlal MetropolitanBook Co.
- Hydraulic & Hydraulic Machines, Prof.V.P. Charotar, Priyani Pub.House.
- Hydraulics & Hydraulic Machines,Prof.R.C.PatelAcharya&A.D. Pandya Book Depot.
- Fluid mechanics and Hydraulic Machines, S.C.Gupta, PEARSONEducation.
- Fluid Mechanics, Douglas, PEARSONEducation.