

Subject: Fluid Mechanics

Class: Second Year

Hours: 1 hour (Theoretical) , 2Hours (Practical)

Objectives:

This subject will introduce fluid mechanics and establish its relevance in civil engineering. Develop the fundamental principles underlying the subject. Demonstrate how these are used for the design the pipe network and related apparatus and the simple hydraulic components.

Week	Practical Syllabus
1	General looking for the instruments in the fluid laboratory ; How to write the practical report.
2-7	Properties of fluid; a- density measurement b- viscosity measurement c- surface tension d- capillarity
8-10	Pressure measurement devices ; a- barometers b- Manometers; 1.piezometers, 2.open U-tube manometer, 3.inclined manometer, 4. Differential manometer. c- Balancing of the force; 1.piston type, 2.bell type, 3.ring type. d- Borden gauge.
11-12	Calibration of pressure gauges
13-14	Center of pressure of submerged surface in liquid
15-17	Hydrostatic forces on submerged surfaces; a- hydrostatic force on a horizontal plane b- hydrostatic force on a vertical plane c- hydrostatic force on inclined plane.
18-20	Flow measurements; a- Pitot-Static tube

	b- Venture meter c- orifice meter
21-23	Reynolds number and type of flow; Laminar flow, Turbulent flow.
24--30	Losses in pipes; a- Major losses in pipes (frictional losses) b- Minor losses in pipes (elbows and valves).

References :

- 1. Douglas, J.F. et al; 2011 (Fluid Mechanics). Prentice Hall.**
- 2. Durgaiiah D. R.; 2002 (Fluid Mechanics and Machinery). New Age international publishers.**
- 3. White, F. M.; 1994 (Fluid Mechanics).3rd ed. McGraw-Hill, New York.**
- 4. Khurmi, R.S.; 1994 (Hydraulics, Fluid Mechanics and Hydraulic Machines). S. Chand and Co. Ltd.**