

## Fluid Mechanics I

**Course Code:** 28461  
**Credits:** 3  
**Course Type:** Theoretical  
**Prerequisites:** Differential Equations  
**Course Length:** 51 hours

### Outlines:

#### 1. Fundamental Concepts of Fluids

Fluid Properties

#### 2. Fluid Statics and Pressure Measurements

Manometry, Hydrostatics Forces, Solid-like motion, Buoyancy, Stability

#### 3. Fluid Kinematics and Reynolds Transport Theorem

Some concepts of fluid motion, Acceleration, Reynolds Transport Theorem

#### 4. Conservation of Mass, Momentum and Energy for Control Volume

Integral form of Continuity, Linear Momentum, Angular Momentum, Conservation of Energy

#### 5. The Bernoulli Equation and Applications

Flow measurements based on Bernoulli equation

#### 6. Dimensional Analysis and Similitude

#### 7. Viscous Flow in Pipes and Ducts,

Reynolds number, Laminar flow, Turbulent Flow, Flow Measurements



## References

1. James E.A. John & William L. Hilman, "Introduction to Fluid Mechanics", Prentic Hall.
2. Frank M. White, "Fluid Mechanics", Mc- Graw Hill, 1994.
3. B. R. Munson: Young & Okishi, "Fundamentals of Fluid mechanics", John – Wiley, 1998.
4. V. L. Streeter: Wylie & Bedford, "Fluid Mechanics", Mc- Graw Hill , 1998.
5. B. S. Massey, "Mechanic of Fluids", VNR, 1986.
6. Irving H. Shames, "Mechanics of Fluid", Mc- Graw Hill. 1986.
7. W. P. graeble, "Engineering Fluid Mechanics", Tylor & Francis Publishers, 2001.
8. Street: Watters & Vennard, "Elementary Fluid Mechanics", John – Wiley.
9. Fox: Mc- Donald, "Introduction to Fluid mechanics", John – Wiley.