09CE242 FLUID MECHANICS AND MACHINERY

Credits: 3:1:0

Objectives:

- The purpose of this course is to learn the Fluid properties and fundamentals of Fluid statics and fluid flow
- To introduce the concepts of flow measurements and flow through pipes
- To introduce the concepts of momentum principles
- To impart the knowledge on pumps and turbines

Unit I Fluid Properties

Fluid Statics: Pressure relation – Pascal’s law – Measurement of pressure – Manometers and Gauges, Forces on plane and curved surfaces – Total pressure and centre of pressure.

Unit II Equations Of Fluid Flow
Types of flow – Stream line – Stream tube – Control volume – Continuity equation – one dimensional and three dimensional flow – velocity potential and stream function – Free and forced vortex flow – Energy equation – Euler’s equation in one dimensional form – Bernoulli’s equation.

Unit III Flow Measurements


Unit IV
Impulse momentum equation- Impact of Jets-plane and curved- stationary and moving plates.


Unit V Turbines
Turbine classification-working principles -Pelton wheel, Francis, Kaplan turbines - Velocity triangles - Similarity laws - Specific speed - Governing of turbines- Surge tanks- Miscellaneous pumps - Jet pump, Gear oil pump,submersible pump – Principle.

Text Books:

Reference Books: