

Fluid Mechanics – II

Course Code: ME-330	Credit Hrs: 2-0
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Text Books & Reference Books:

1. Munson, Young, Okiishi, HTJohn, Fundamentals Of Fluid Mechanics, J. Wiley & Sons.
2. Philip J. Pritchard and John C. Leylegian, Fox And McDonald's Introduction To Fluid Mechanics, Wiley & Sons.
3. Frank M White, Fluid Mechanics, McGraw Hill

Course Outline:

- Differential Analysis of Fluid Flow: Deriving continuity equation by applying conservation of mass principle, evaluating velocity and acceleration field using material derivative & Deriving Navier-Stokes equation and some simple analytical solution
- Potential flow theory: Concept of vorticity, Circulation, Inviscid and Irrotational flow field, Basic velocity potential function and its superposition & Prediction of Lift and drag using potential flow theory.
- Flow over immersed bodies: Boundary layer theory and its thicknesses, Concept of local and average drag coefficient & Calculating drag and lift forces due to pressure and velocity field.
- Introduction to Computational Fluid Dynamics: Finite difference formulation & Solving basic fluid flow problems using available CFD code.
- Compressible Flows: Mach number and speed of sound, Isentropic flow of an ideal gas & Convergent divergent Nozzle.
- Turbomachinery: Fans, Pumps, turbines and other flow devices, Deriving Euler's equation and solving of turbo-machine problems using velocity triangle & Pump and turbine

performance characteristic curves.

Experiments related to the Fluid Mechanics will be covered.

Assessments:

Quizzes, Assignments, Mid Exam, Final Exam, Report Writing, Lab Viva,

Open Ended Lab