Course Title:	Course Code:	Credit Hrs:
Fluid Mechanics - II	ME-238	2+1

Textbooks:

- Munson, Young, Okiishi, HTJohn, Fundamentals Of Fluid Mechanics, J. Wiley & Sons.

Reference Books:

- Philip J. Pritchard and John C. Leylegian, Fox And McDonald's Introduction To Fluid Mechanics, Wiley & Sons.
- Frank M White, Fluid Mechanics, McGraw Hill

Course Objective:

Fluid Mechanics II aims to advance students' understanding of complex fluid flow phenomena and equip them with analytical and computational skills for solving real-world engineering problems in fluid dynamics and systems design.

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.

Description	Percentage Weightage (%)
Assignments	05-10%
Quizzes	10-15%
Mid Semester Exams	30-40%
End Semester **ASSESSMENTS** Exam	40-50%