

Relevant Course: Fluid Mechanics

Relevant Department: Mechanical Engineering, Civil Engineering, Aerospace Engineering, Chemical Engineering, Metallurgy and Materials Engineering, Biotechnology, Power Engineering, Energy Engineering, Physics, Applied Mathematics

Relevant Semester: 3rd

Pre- requisite : Engineering Mathematics with integral calculus, differential calculus and vector calculus

Course Description and Outline:

Dynamics of Inviscid Flows: Equation of motion for inviscid flow in cartesian coordinates, Pressure differential between two points in an inviscid flow field, Euler's equation of motion in streamline coordinate system.

Differential form of Conservation Equations: Navier-Stokes equations – derivations, Concept of Fully developed flow.

Some exact solutions of Navier-Stokes equation for steady incompressible flows: Flow between two infinite parallel plates (plane Poiseuille flow), Shear driven flow between two parallel plates, Thin film flow along an inclined wall, Flow through circular tube / pipe (Hagen Poiseuille flow)

Finalized topic name: Fundamental Concepts in Fluid Dynamics