

AM5530: ADVANCED FLUID MECHANICS

Course Content:

Introduction basic equations of motion of fluid flow Equation of continuity NavierStokes equations Euler's equations Bernoulli's equation Ideal fluid flow Flow past circular cylinder with and without circulation Aerofoil viscous fluid flow exact solutions of NavierStokes equations Prandtl's boundary layer equations Blasius solution Approximate methods Transition and turbulent flows Flow through pipe and flow past a flat plate Turbulent boundary layer One and two dimensional compressible flows Compressible viscous flows Compressible boundary layers.

Text Books:

1. **G. K. Batchelor**, "An Introduction To Fluid Mechanics"

Reference Books:

1. **Frank M. White**, "Viscous Fluid Flow" •
2. **G. K. Batchelor**, "An Introduction To Fluid Mechanics"
3. **John C. Tannehill, Dale Anderson & R.H. Pletcher**, "Computational Fluid Mechanics And Heat Transfer"
4. **John D. Anderson Jr.**, "Modern Compressible Flow"
5. **H. Schlichting & K. Gersten**, "Boundary Layer Theory"

Prerequisite: