



FLUID MECHANICS

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INTENDED AUDIENCE : Undergraduate Students of Civil/ Mechanical and Engineering

COURSE OUTLINE :

Fluid Mechanics is an inter-disciplinary course covering the basic principles and has applications in Civil Engineering, Mechanical Engineering and Chemical Engineering. The students will have new problem solving approaches like control volume concept and streamline patterns which are now a days required to solve the real-life complex problems. The visualization of the fluid-flow problems will be demonstrated to enhance student's interest on the subject.

ABOUT INSTRUCTOR :

Prof. Dutta has more than 15years experience of teaching in IIT Guwahati for both undergraduate and postgraduate students the Fluid Mechanics course in undergraduate level was instructed five times by Prof. Dutta. Besides this, he has developed an NPTEL web course on Fluid Mechanics for undergraduate students. As a part of research and consultancies work Prof Dutta has done mathematical modeling of different rivers like the Brahmaputra. In this course, some of the real life problems will be discussed.

COURSE PLAN :

Week-1: Introduction And Basic Concepts

Week-2: Properties Of Fluids

Week-3: Pressure And Fluid Statics

Week-4: Fluid Kinematics

Week-5: Mass, Bernoulli, And Energy Equations

Week-6: Momentum Analysis Of Flow Systems

Week-7: Dimensional Analysis And Modeling

Week-8: Flow In Pipes

Week-9: Differential Analysis Of Fluid Flow

Week-10: Approximate Solution Of Navier Stokes Equation

Week-11: Drag And Lift

Week-12: Introduction To Open Channel Flow