



# FLUID DYNAMICS AND TURBOMACHINES

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**PRE-REQUISITES :** 1. Basic Engineering Mathematics 2. Engineering Mechanics 3. Basic Engineering Thermodynamics

**INTENDED AUDIENCE :** 1. Undergraduate students 2. Practicing engineers (refresher course)

**INDUSTRIES APPLICABLE TO :** Pump and turbine industry

**COURSE OUTLINE :**

The first part of the course introduces important concepts of fluid dynamics which forms the theoretical foundation for the second portion of the course on turbomachines. The course is intended for advanced B. Tech/B. E. students as well as a refresher course for practicing engineers working in the field of pump and turbine industries.

**ABOUT INSTRUCTOR :**

Prof. Dhiman Chatterjee is currently an Associate Professor in the department of Mechanical Engineering, IIT Madras. He teaches Incompressible Fluid Flow and Turbomachines. His research specialization includes turbomachines and cavitation.

Prof. Shamit Bakshi is currently an Associate Professor in the department of Mechanical Engineering, IIT Madras. He teaches Incompressible Fluid Flow and IC Engines. His research specialization includes droplet/spray processes and I.C. Engine flows.

**COURSE PLAN :**

**Week 1:** Introduction to fluid flows

**Week 2:** Integral approach for analyzing fluid flow

**Week 3:** Differential approach for analyzing fluid flow

**Week 4:** Incompressible viscous internal and external flow

**Week 5:** Introduction to turbomachines

**Week 6:** Principle of turbomachines

**Week 7:** Performance of pump and hydraulic turbine

**Week 8:** Performance of steam and gas turbine