

Modelling Engineering Turbulent Flows

Overview

Most of the flows experienced in different fields of engineering are turbulent in nature. Thus accurate prediction of the flow features is important for better designs. There are three main approaches to solve turbulent flows viz. Direct Numerical Simulation (DNS), Large Eddy Simulation (LES) and Reynolds Averaged Navier-Stokes equations (RANS). DNS resolves all the scales of turbulence and is the most accurate, but is computationally expensive, with range of application limited to low Reynolds numbers. LES resolves the large scales of turbulence up to the inertial scales and models the small dissipative scales. LES is still computationally expensive, but can be extended to more complex flows at higher Reynolds numbers than DNS. RANS on the other hand models the full spectrum of turbulent scales and is most widely applicable to complex engineering applications. In this course, different modelling approaches will be taught.

Modules	A: Modelling Engineering Turbulent Flows : Dec 19 – Dec 25, 2015 Number of participants for the course will be limited to 200 including students from IITM.
You Should Attend If...	<ul style="list-style-type: none">▪ you are an Mechanical, Aerospace, Civil, Chemical engineer or research scientist involved in applying turbulence models.▪ you are a student or faculty from academic institution interested in learning fundamentals of turbulence models and the applicability and limitations of different models.
Fees	The participation fees for taking the course is as follows: Student: INR 1000 Faculty of institution: INR 3000 Govt. Research organization: INR 5000 Private Industry : INR 10000 The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation on payment basis.

The Faculty



Prof. Danesh Tafti is a Professor in the Department of Mechanical Engineering, Virginia Tech., USA. His research interest includes Modelling of Turbulent Flows, CFD, Insect and Bird Aerodynamics, Multiphase Flows.



Prof. S.Vengadesan is a Professor in the Department of Applied Mechanics, IIT Madras. His research interest includes application of turbulence models and CFD for different engineering problems, Insect Aerodynamics, BioFluid Mechanics.

Course Co-ordinator

Prof.S.Vengadesan

Phone:044-22574063/22574051

E-mail: vengades@iitm.ac.in

<https://apm.iitm.ac.in/fmlab/sv/index.html>