Turbulence Models For Engineering Applications

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Overview

Turbulent flows exist in all engineering fields. The accurate prediction of the flow features like pressure drop, near wall phenomena, structure etc., are important for better designs. Broadly, turbulent flow simulation/prediction methods are classified under three categories viz. Direct Numerical Simulation (DNS), Large Eddy Simulation (LES) and Reynolds Averaged Navier-Stokes equations (RANS). Though DNS resolves all the scales of turbulence and is the most accurate, it is computationally expensive and limited now to low Re flows and hence far from to be applied for simulating engineering problems. 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. On the other hand, RANS models are simpler and are most widely applicable to complex engineering applications. In this course, different modelling approaches will be taught with specific emphasis to engineering applications.

Modules	**A: Turbulence Models for Engineering Applications : May 16 – May 22, 2016** **Number of participants for the course will be limited to 200 including students from IITM.**
You Should Attend If…	▪ 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: **Students: INR 1000; Faculty: INR 3000;** **Govt. Research Organizations: INR 5000** **Industry Participants: INR 20000** The above fee is towards participation in the course, the course material, computer use for tutorials and assignments, and laboratory equipment usage charges. **Mode of payment: Demand draft in favour of "Registrar, IIT Madras" payable at Chennai**
Accommodation	The participants may be provided with hostel accommodation, depending on the availability, on payment basis. Request for hostel accommodation may be submitted through the link: http://hosteldine.iitm.ac.in/iitmhostel

The Faculty

Prof. Paul Durbin is a Professor in the Department of Aerospace Engineering, IOWA State University, USA. His research areas are Computational simulation and analytical modeling of turbulence. Theory, simulation and modeling of laminar to turbulent transition.

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

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