AE 225

Incompressible Fluid Mechanics

AE 225 : Incompressible Fluid Mechanics

(From 21st July, to 5th Sept., 2014)

1. Introduction. Fluid Properties, fluid Forces, and flow regimes
2. Fluid Statics.
3. Kinematics of fluid flows, Lagrangian and Eulerian descriptions
4. Streamline, Pathline, and Streakline, Dilation strain rate, circulation, Vorticity
5. Local and Global decomposition of Fluid flows
6. Conservation of mass, momentum and energy in fixed, deforming and moving control volumes
7. Bernoulli equation

...Instructor : Gopal Shevare, Gr. Floor., Aero. annxe Bldg

(Int. com no 7112)

AE 225 : Incompressible Fluid Mechanics

(From 15th Sept., to 14th Nov., 2014)

8. Potential flow, Stream function, Velocity potential, Source, Sink, Doublet, Vortex.
9. Similitude, Dimensional analysis and modeling; Important non-dimensional groups in fluid mechanics.
10. Equation of motion in differential form.
11. Viscous flow, exact solutions, pipe flow.
12. Laminar boundary layers, Boundary layer solution methods.
13. Introduction to turbulence, Reynolds averaging, Reynolds stress, Mixing length model, Turbulent boundary layer.

...Instructor : Aniruddha Sinha, 1st floor, aero. Main bldg

(Int. comm no 7103)

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Reference Material	
White F.M.:	Fluid Mechanics, 7th edition, McGraw Hill
Panton, R.L.	Incompressible Flow, 3rd edition, Wiely Indian Edition, 2006
Cengel, Y.A. el.al.	Fluid Mechanics (Fundamentals and Applications, 2nd edition TATA McGraw Hill 2010

Days	Hours	Classroom
Monday	1030 Hrs	LC002
Tuesday	1130 Hrs	LC002
Thursday	0830 Hrs	LC002

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Evaluation	
Quiz # 1	10 %
Mid-semester exam (Complete portion till mid-sem)	40 %
Quiz # 2	10 %
End-semester exam (Portion from mid-sem onwards only)	40 %