Computational Fluid Dynamics and Heat Transfer - Web course

COURSE OUTLINE

1. Introduction.

2. Introduction to Finite Difference Methods.

3. Introduction to Finite Volume Methods.

4. Introduction to Finite Element Methods.

5. Stream Function Vorticity Methods for Solving N-S equations.

6. MAC-SIMPLE Methods to solve Incompressible Flows and Heat Transfer.

7. Finite Volume Methods to Solve Incompressible N-S Equations.

8. Finite Element Methods to Solve Incompressible N-S Equations.

9. Modeling Approaches to Solve Turbulent Flows.

References:

1. Computational Technique for Fluid Dynamics, Vol. 1 and Vol. 2 CAJ Fletcher, Springer Verlag.

2. Numerical Heat Transfer and Fluid Flow, S V Patankar, Hemisphere Publishing.

3. Computational Fluid Dynamics, John D Anderson, Jr, McGraw Hill Book Company.

4. Finite Elements in Engineering, T R Chandraputla and A D Belegundu, Prentice Hall of India.

NPTEL

http://nptel.iitm.ac.in

Mechanical Engineering

Pre-requisites:

- Basic Fluid Mechanics.

- Heat Transfer.

- Numerical Methods.

- Mathematics.

Additional Reading:

- Computational Fluid Dynamics, Vol. 1 and Vol. 2 K A Hoffmann and S T Chiang, EES Books.

Hyperlinks:

http://home.iitk.ac.in/~gtm/turbulence/ui/TOC.htm

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