Fundamentals of Transport Processes - II - Video course

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Chemical Engineering

COURSE OUTLINE

The objective of this course is to provide a fundamental understanding of momentum transport and fluid mechanics.

COURSE DETAIL

Sr. No.	Subject	Lectures	Reading
1	Introduction	1-2	
2	Vectors & Tensors	3-6	Griffiths 1
3	Kinematics	7-8	Batchelor 2
4	Navier-Stokes equations	9-14	Batchelor 3.1-3.4
5	Viscous flow	15-24	Batchelor 1.9, 4.10-4.11, Leal 4A-F,5A-B
6	Potential flow	25-30	Panton 18, Batchelor 6
7	Boundary layer theory	30-37	Leal 11A-E,12A-B
8	Turbulence	38-40	Tennekes & Lumley 1,2,5.1-5.2

References:

1. D. J. Griffiths, An Introduction to Electrodynamics, Prentice Hall International, 1994.
2. G. K. Batchelor, An Introduction to Fluid Dynamics, Cambridge University Press, 1967.
3. L. G. Leal, Advanced Transport Phenomena, Cambridge University Press, 2007.
4. R. L. Panton, Incompressible flow, John Wiley & Sons, New York, 1984.
5. H. Tennekes and J. L. Lumley, A first course in turbulence, The MIT Press, 1972.

Pre-requisites:

Fundamentals of Transport Processes - 1.

Coordinators:

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