

# NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC:Transport Phenomena in Materials

Subject Co-ordinator - Dr. G. Phanikumar

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Subscript Notation - Part 1  
Lecture 2 - Subscript Notation - Part 2  
Lecture 3 - Coordinate Rotation  
Lecture 4 - Introduction to Tensors  
Lecture 5 - Symmetry of Properties  
Lecture 6 - Material Derivative  
Lecture 7 - Planar Flows  
Lecture 8 - Reynolds Transport Theorem  
Lecture 9 - Derivation of Navier-Stokes equation  
Lecture 10 - Navier Stokes equations - Part 2  
Lecture 11 - Flow problem statements  
Lecture 12 - Simple cases in fluid flow : rectangular coordinate system  
Lecture 13 - Simple cases in fluid flow : cylindrical coordinate system  
Lecture 14 - Pipe flow and porous medium  
Lecture 15 - Simple cases in fluid flow : spherical coordinate system  
Lecture 16 - Friction factors and correlations  
Lecture 17 - Energy Transport  
Lecture 18 - Conduction cases - Steady state  
Lecture 19 - Conduction cases - Transient state  
Lecture 20 - Convective heat transfer  
Lecture 21 - Mass Transfer Overview  
Lecture 22 - Chemical Equilibrium  
Lecture 23 - Reaction Equilibrium  
Lecture 24 - Species Balance Equation  
Lecture 25 - Solute Transfer Modelling - Part 1  
Lecture 26 - Solute Transfer Modelling - Part 2  
Lecture 27 - Solute Segregation Profile - Part 1  
Lecture 28 - Solute Segregation Profile - Part 2  
Lecture 29 - Problem Statements

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- Lecture 30 - Diffusion in Solid State
- Lecture 31 - Transient Solute Diffusion in Solid State
- Lecture 32 - Mass Transfer in Fluids
- Lecture 33 - Similarity Across Transport Phenomena