

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

NPTEL Video Course - Chemical Engineering - Multiphase Flows - Analytical solutions and Stability Analysis

Subject Co-ordinator - Prof. S. Pushpavanam

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction and overview of the course
- Lecture 2 - Stratified flow in a micro channel
- Lecture 3 - Stratified flow in a micro channel
- Lecture 4 - Flow regimes in microchannels
- Lecture 5 - Scaling Analysis
- Lecture 6 - Scaling Analysis
- Lecture 7 - Interfacial tension and its role in Multiphase flows
- Lecture 8 - Eulerian and Lagrangian approaches
- Lecture 9 - Reynolds Transport Theorem and the Equation of Continuity
- Lecture 10 - Derivation of Navier-Stokes equation
- Lecture 11 - Vector operations in general orthogonal coordinates
- Lecture 12 - Normal and shear stresses on arbitrary surfaces
- Lecture 13 - Normal and shear stresses on arbitrary surfaces
- Lecture 14 - Stresses on deforming surfaces
- Lecture 15 - Pulsatile flow
- Lecture 16 - Pulsatile flow
- Lecture 17 - Pulsatile flow
- Lecture 18 - Viscous heating
- Lecture 19 - Domain perturbation methods
- Lecture 20 - Flow between wavy walls
- Lecture 21 - Introduction to stability of dynamical systems
- Lecture 22 - Stability of distributed systems (PDEs)
- Lecture 23 - Stability of a reaction-diffusion system (Continued...)
- Lecture 24 - Rayleigh-Benard convection
- Lecture 25 - Rayleigh-Benard convection
- Lecture 26 - Rayleigh-Benard convection
- Lecture 27 - Rayleigh-Benard convection
- Lecture 28 - Rayleigh Benard convection
- Lecture 29 - Rayleigh-Taylor  $\hat{a}$  heavy over light  $\hat{a}$  instability

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- Lecture 30 - Rayleigh-Taylor instability (Continued...)
- Lecture 31 - Capillary jet instability
- Lecture 32 - Capillary jet instability
- Lecture 33 - Capillary jet instability
- Lecture 34 - Tutorial Session
- Lecture 35 - Turing patterns
- Lecture 36 - Turing patterns
- Lecture 37 - Marangoni convection
- Lecture 38 - Marangoni convection
- Lecture 39 - Flow in a circular curved channel
- Lecture 40 - Flow in a circular curved channel
- Lecture 41 - Stability of flow through curved channels
- Lecture 42 - Stability of flow through curved channels
- Lecture 43 - Viscous Fingering
- Lecture 44 - Viscous Fingering
- Lecture 45 - Shallow Cavity flows