

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

NPTEL Video Course - Mechanical Engineering - NOC:Introduction to Boundary Layers

Subject Co-ordinator - Dr. Rinku Mukherjee

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Review of fundamentals of fluid mechanics - I
- Lecture 2 - Review of fundamentals of fluid mechanics - II
- Lecture 3 - Concept of a Boundary Layer (BL) - I
- Lecture 4 - Concept of a Boundary Layer (BL) - II
- Lecture 5 - Concepts of BL thickness (?)
- Lecture 6 - Concepts of BL displacement thickness (?\*) and BL momentum thickness (?)
- Lecture 7 - Control Volume approach to derive expressions for ?\* over a flat plate
- Lecture 8 - Control Volume approach to derive expressions for ? over a flat plate
- Lecture 9 - Concept of wall friction
- Lecture 10 - Concept of friction drag
- Lecture 11 - Skin Friction Coefficient - I
- Lecture 12 - Skin Friction Coefficient - II
- Lecture 13 - Derivation of Prandtl's Laminar BL Equations - I
- Lecture 14 - Derivation of Prandtl's Laminar BL Equations - II
- Lecture 15 - Derivation of Prandtl's Laminar BL Equations - III
- Lecture 16 - Derivation of Prandtl's Laminar BL Equations - IV
- Lecture 17 - Similarity Solutions to the BL Equations Applied to a Flat Plate - I
- Lecture 18 - Similarity Solutions to the BL Equations Applied to a Flat Plate - II
- Lecture 19 - Similarity Solutions to the BL Equations Applied to a Flat Plate - III
- Lecture 20 - Runge-Kutta Method to Numerically Solve the BL Equations Applied to a Flat Plate
- Lecture 21 - Description of the Numerical Code to Solve the BL Equations Applied to a Flat Plate
- Lecture 22 - Similarity Solutions to the BL Equations (other than flat plate) - I
- Lecture 23 - Similarity Solutions to the BL Equations (other than flat plate) - II
- Lecture 24 - Similarity Solutions to the BL Equations (other than flat plate) - III
- Lecture 25 - Similarity Solutions to the BL Equations (other than flat plate) - IV
- Lecture 26 - Description of the Numerical Code to Solve the BL Equations (other than flat plate)
- Lecture 27 - The Energy Equation - I
- Lecture 28 - The Energy Equation - II
- Lecture 29 - Similarity Solutions to Thermal BL - I

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- Lecture 30 - Similarity Solutions to Thermal BL - II
- Lecture 31 - Similarity Solutions to Thermal BL - III
- Lecture 32 - BL Separation with Pressure-Gradient - I
- Lecture 33 - BL Separation with Pressure Gradient - II
- Lecture 34 - Effect of Prandtl Number in Thermal BL - I
- Lecture 35 - Effect of Prandtl Number in Thermal BL - II
- Lecture 36 - Effect of Prandtl Number in Thermal BL - III
- Lecture 37 - Effect of Dissipation in Thermal BL - I
- Lecture 38 - Effect of Dissipation in Thermal BL - II
- Lecture 39 - Effect of Dissipation in Thermal BL - III
- Lecture 40 - Similarity Solutions to Thermal BL - An Overview