

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

NPTEL Video Course - Mechanical Engineering - Convective Heat Transfer

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Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction to convective heat transfer - Part 1
- Lecture 2 - Introduction to convective heat transfer - Part 2
- Lecture 3 - Continuity Equation
- Lecture 4 - Momentum and Energy Equations
- Lecture 5 - Energy Equation
- Lecture 6 - Reynolds Transport Theorem
- Lecture 7 - Entrophy Generation and streamfunction-vorticity formulation
- Lecture 8 - Couette flow - Part 1
- Lecture 9 - Couette flow - Part 2
- Lecture 10 - Couette flow - Part 3
- Lecture 11 - Boundary layer approximation
- Lecture 12 - Laminar External flow past flat plate (Blasius Similarity Solution)
- Lecture 13 - Numerical solution to the Blasius equation and similarity solution to heat transfer
- Lecture 14 - Pohlhausen similarity solution and flows including pressure gradient (Falkner-Skan)
- Lecture 15 - Falkner skan solutions for heat transfer
- Lecture 16 - Similarity solution for flow and heat transfer with transpiration at walls
- Lecture 17 - Thermal boundary layer in high speed flows
- Lecture 18 - Approximate(Integral) methods for laminar external flow and heat transfer
- Lecture 19 - Integral method for laminar external thermal boundary layer over isothermal surface
- Lecture 20 - Integral method for flows with pressure gradient (von Karman-Pohlhausen method)
- Lecture 21 - Integral method with pressure gradient
- Lecture 22 - Heat transfer across a circular cylinder
- Lecture 23 - Duhamel's method for varying surface temperature
- Lecture 24 - Laminar External heat transfer with non uniform surface temperature
- Lecture 25 - Laminar internal forced convection - fundamentals
- Lecture 26 - Hydrodynamically and thermally fully developed internal laminar flows
- Lecture 27 - Fully developed laminar internal flow and heat transfer
- Lecture 28 - Shooting method for fully developed heat transfer and thermal entry length problem
- Lecture 29 - Thermal entry length problem with plug velocity profile

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- Lecture 30 - Extended Graetz problem for parabolic velocity profile
- Lecture 31 - Extended Graetz problem
- Lecture 32 - Extended Graetz problem with wall flux boundary condition
- Lecture 33 - Approximate method for laminar internal flows
- Lecture 34 - Integral method for thermal entry length problem
- Lecture 35 - Introduction to Natural Convection Heat Transfer
- Lecture 36 - Similarity Solution in Natural Convection for Vertical isothermal Plate - Part 1
- Lecture 37 - Similarity Solution in Natural Convection for Vertical isothermal Plate - Part 2
- Lecture 38 - Similarity Solution in Natural Convection for Vertical isoflux Plate
- Lecture 39 - Approximate Method in Natural Convection Heat Transfer
- Lecture 40 - Natural Convection in Other Configurations
- Lecture 41 - Turbulent Convective Heat Transfer
- Lecture 42 - Turbulent Convective Heat Transfer
- Lecture 43 - Analogies in Turbulent Convective Heat Transfer - Part 1
- Lecture 44 - Analogies in Turbulent Convective Heat Transfer - Part 2