NPTEL Video Course - Chemical Engineering - Heat Transfer

Subject Co-ordinator - Prof. A.K. Ghoshal

Co-ordinating Institute - IIT - Guwahati

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

Lecture 1 - Introduction to heat transfer
Lecture 2 - General heat conduction equation
Lecture 3 - One dimensional steady state conduction in rectangular coordinate
Lecture 4 - One dimensional steady state conduction in cylindrical and spherical coordinate
Lecture 5 - Critical and optimum insulation
Lecture 6 - Extended surface heat transfer - 1
Lecture 7 - Extended surface heat transfer - 2
Lecture 8 - Analysis of lumped parameter model
Lecture 9 - Transient heat flow in semi infinite solid
Lecture 10 - Infinite body subjected to sudden convective
Lecture 11 - Graphical solutions of unsteady state heat conduction problem
Lecture 12 - Dimensional analysis for forced convection
Lecture 13 - Dimensional analysis for free convection
Lecture 14 - Heat transfer co-relations for laminar and internal flows
Lecture 15 - Heat transfer co-relations for turbulent and internal flows
Lecture 16 - Co-relation for turbulent and external flows
Lecture 17 - Heat transfer co-relations for flow across tube banks
Lecture 18 - Momentum and heat transfer analogies
Lecture 19 - Boundary layer heat transfer
Lecture 20 - Boundary layer equations
Lecture 21 - Approximate analysis in boundary layer
Lecture 22 - Theoretical concepts of natural / free convention heat transfer
Lecture 23 - Emperical relations for free convention heat transfer
Lecture 24 - Condensation heat transfer over vertical plate
Lecture 25 - Condensation heat transfer for various conditions and geometries
Lecture 26 - Fundamentals of boiling heat transfer
Lecture 27 - Boiling heat transfer co-relations
Lecture 28 - Classification of heat exchangers
Lecture 29 - Various types of shell and tube heat exchangers

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Lecture 30 - Various types of compact heat exchangers
Lecture 31 - Effectiveness-NTU, method of heat exchanger analysis
Lecture 32 - Design of double pipe heat exchanger
Lecture 33 - Design of shell and tube heat exchanger
Lecture 34 - Introduction to evaporation and evaporators
Lecture 35 - Evaporation principles and evaporator performance
Lecture 36 - Evaporator calculations
Lecture 37 - Introduction to radiation heat transfer
Lecture 38 - Radiation intensity and radiation view factor
Lecture 39 - Radiation heat exchange
Lecture 40 - Radiation shield and gas radiation
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