



Heat Transfer 2

Course Code: 28121
Credits: 3
Course Type: Theoretical
Prerequisites: Heat Transfer 1
Corequisite: -
Course Length: 51 Hours

Outline:

1 - FREE CONVECTION

The Governing Equations for Laminar Boundary Layers, Similarity Considerations, Laminar Free Convection on a Vertical Surface, The Effects of Turbulence, Empirical Correlations for external flows, Free Convection Within Parallel Plate Channels, Enclosures, Combined Free and Forced Convection

2 - BOILING AND CONDENSATION

Dimensionless Parameters in Boiling and Condensation, Pool Boiling, Forced Convection Boiling, Laminar Film Condensation on a Vertical Plate, Turbulent Film Condensation, Film Condensation on Radial Systems, Condensation in Horizontal Tubes

3 - FUNDAMENTALS OF THERMAL RADIATION

Radiation Heat Fluxes, Radiation Intensity, Blackbody Radiation, Emission from Real Surfaces, Absorption, Reflection, and Transmission by Real Surfaces, Kirchhoff's Law, The Gray Surface, Environmental Radiation

4 - RADIATION EXCHANGE BETWEEN SURFACES

The View Factor, Blackbody Radiation Exchange, Radiation Exchange Between Opaque, Diffuse, Gray Surfaces in an Enclosure, Multimode Heat Transfer, Radiation Exchange with Participating Media

5 - HEAT EXCHANGERS

Heat Exchanger Types, The Overall Heat Transfer Coefficient, Heat Exchanger Analysis: Use of the Log Mean, The Effectiveness–NTU Method,

6 - AN INTRODUCTION TO DIFFUSION MASS TRANSFER



References:

1. "Introduction to Heat Transfer". F. P. Incropera and D. P. DeWitt, Wiley
2. "Heat Transfer", J. P. Holman, McGraw-Hill
3. "Heat transfer, a practical approach", Y.A. Cengel, McGraw-Hill