ME 311 Heat Transfer (3-0-0-6)

Pre-requisite: ME 211 Thermodynamics or Equivalent

Modes of heat transfer; Conduction: 1-D and 2-D steady conduction; 1-D unsteady conduction-Lumped capacitance and analytical methods; Fins, Convection: fundamentals, order of magnitude analysis of momentum and energy equations; hydrodynamic and thermal boundary layers; dimensional analysis; free and forced convection; external and internal flows; heat transfer with phase change, Radiation: Stefan-Boltzmann law; Planck's law; emissivity and absorptivity; radiant exchange between black surfaces, Heat exchangers: LMTD and NTU methods.

Texts:
[1] F. P. Incropera and D. P. Dewitt, Fundamentals of Heat and Mass Transfer, John Wiley and Sons, 2009.
[2] J. P. Holman, Heat Transfer, McGraw Hill, 2007.

References:
[1] M. N. Ozisik, Heat Transfer-A Basic Approach, McGraw Hill, 1985.
[2] A. Bejan, Convective Heat Transfer, John Wiley and Sons, 2004.
[3] F. Kreith and M. S. Von, Principles of Heat Transfer, Brook and Cole Publication, 2001.