FLUID MECHANICS & HEAT TRANSFER

Kinematics

Velocity, Acceleration
Pathlines, Streamlines

Fluid Statics

Basic Law of Hydrostatics
Forces on Submerged Surfaces

Conservation of Mass

Integral Form, Differential Form (One Dimensional)

Momentum Equation

Integral Form, Differential Form (One Dimensional)

Incompressible, Inviscid Flow

Euler's Equation
Bernoulli's Equation
Stream Function
Vorticity, Irrotational Flow
Velocity Potential
Source, Sink, Doublet

Incompressible, Viscous Flow

Newtonian Fluid, Viscosity
Fluid Developed Laminar Flow
Turbulent Flow in Pines (Head Loss)
Boundary Layer (Integral Methods)
Lift and Drag
Flow Measurements (Orifice, Venturi)

Compressible, Inviscid Flow

Equations of State (Perfect Gas)
Isentropic Flow
Sonic Velocity and Mach Number
Converging Nozzle
Converging - Diverging Nozzle

Conduction

Fourier's Law (Thermal Conductivity)

One-Dimensional Stady Conduction Area Chang, Internal Energy Generation

Extended Surfaces (Fins)
Unsteady Conduction in One Dimension
Lumped Analysis Method for Transient Conduction
Heisler Charts

Convection

Boundary Layer Concepts
Forced and Natural Convection in Laminar and Turbulent Flows
Convection Heat Transfer Coefficient

Dimensional Analysis, Correlations
Logarithmic Mean Temperature

Radiation

Emissivity, Absorptivity, Relfectivity, Transmissivity
Intensity of Monochromatic Emissive Power
Black Body Radiation
Wave Length Dependent Properties
Gray Surfaces
Shape Factor
Radiosity Method (Including Electrical Analogy)

References:

Robberson, J. A. and C. T. Crowe, Engineering Fluid Mechanics, Houghton Mufflin Co., 1975.
Kreith, F., Principles of Heat Transfer, 3rd ed. (New York: Intext Education Publishers, 1965).
Fox and McDonald, Introduction to Fluid Mechanics, 2nd ed. (New York: John Wiley and Sons).
Holman, J. P., Heat Transfer, 4th ed. (McGraw Hill).