The First Law with Heat and Work Learning Objectives

At the end of this chapter you should be able to...

- Differentiate between system, surroundings, and boundaries and make appropriate decisions for defining these parts of a problem.
- Use the Zeroth Law of Thermodynamics to describe the temperature of objects and utilize thermal equilibrium to solve problems.
- Use the First Law of Thermodynamics to solve problems involving cylinders, pistons, and gases.
- Use heat, work, and internal energy to describe energy/energy flow in thermodynamic systems.
- Use the appropriate sign conventions for heat, work, and internal energy.
- Differentiate between reversible and irreversible process and calculate work, heat, and internal energy for both.
- Utilize Heat Capacities to solve problems involving temperature changes and heat.
- Differentiate path variables and state variables and write exact differentials for state variables.
- Differentiate between enthalpy and internal energy and appropriately apply these state functions to solve problems.
- Calculate heat, work, internal energy, and/or enthalpy changes for problems involving gases, cylinders, pistons, and simple masses.