ENGRD 221: ENGINEERING THERMODYNAMICS

Lecture 2: August 28, 2007

Reading Assignments (from Moran & Shapiro, Sixth Edition): Sections 1.3.3, 1.3.4, 1.4, 1.5, 1.6., 1.7 and 1.8. Also briefly Sections 2.1 and 2.2.

Topics covered:

- Thermodynamic processes
- Equilibrium states and processes
- Extensive and intensive properties
- Equation of state
- Thermodynamic cycles
- 'Slow' processes – equilibrium processes
- Equilibrium states, quasistatic thermodynamic processes
- Heat and temperature
- Adiabatic boundary, adiabatic process, diathermal boundary, isolating boundary
- Zeroth Law of Thermodynamics, thermal equilibrium
- Caloric definition of temperature
- Pressure, pressure units
- Variation of pressure with depth, Pascal's law
- Manometer and barometer
- Gage pressure $P_{\text{gage}} = P_{\text{absolute}} - P_{\text{atm}} > 0$ and vacuum pressure $P_{\text{vaccum}} = P_{\text{atm}} - P_{\text{absolute}} > 0$.
- Introduction to 'work' concepts, 'thermodynamic work'
- Reviewing from physics, External Work Done = Change in Potential + Kinetic energy of the system