ENGR 3203

Lecture 1

Syllabus & Thermo Concepts

- Lecture 1
    - Syllabus
        - Read the syllabus
        - Listen to Lemley talk about syllabus
    - Intro
        - What is thermodynamics?
            - Science of conversion of energy from one form to another.
            - Based on experimental observation
    - Where does thermo fit in scheme of mechanics, physics, etc...?
    - Is heat transfer the same thing as thermodynamics?
    - What is in the book?
        - Thermo description
        - Problems
        - Example Problems
        - Reference Tables
    - Things you can understand with Thermo (Sontagg et al, 1.1 – 1.8)
        - Energy Production
            - Steam Power Plants
                - What is a steam generator?
                - What is a turbine-generator?
                - What is a condenser?
                - What is a pump?
                - How can you make steam (what fuels)?
                    - Waste from Coal?
                    - Waste from Nuclear?
                    - Waste from oil?
            - Fuel Cells (Direct Electricity Production)
                - What gases can be used?
                - What happens in the ion exchange membrane?
                - What is the waste effluent from the type of fuel cell in the book?
            - Gas Turbines
                - Nat. gas power plants
                - What is the waste?
        - Refrigeration, Air Conditioning, and Heat Pumps

    - What is an evaporator?
    - What is a compressor?
    - What is a condenser?
    - What is an expansion valve?
- Thermoelectric Refrigeration (Direct Refrigeration)
    - EMF generated between two dissimilar metals when heated, by applying external EMF will heat and cool dissimilar metals. (thermocouples)
- Chemical Separation
- Propulsion
- Environmental Effects