**PHYS 202     Study Guide for Test #1   Chap 12-15: Heat and Thermodynamics**Test will consist of MC questions, questions, and problems.  
 **Temperature & Heat, Chapter 12:1-8**

* **Temperature** and **Thermometers:** Temperature scales and different types of thermometers.
* **Temperature conversion**: Tf = (9/5) Tc + 32,  Tk = Tc + 273.
* **Thermal Expansion:** Linear, area, and volume thermal expansion and bi-metallic strip.  
      
* What is **Heat** and how is it related to **Temperature** and **Internal Energy**?
* How do I use **Specific Heat** to solve **Calorimetry** problems?   
  Q = mcΔT. Q = mL.

**Heat Transfer, Chapter 13:1-4**

* Methods of Heat Transfer: Convection, Conduction, and Radiation.
* Heat transfer by conduction: 
* Heat transfer by radiation: 

**Ideal Gas Law, Chapter 14**

* How do **Real Gases** differ from an ideal gas?
* How do the **Gas Laws** allow us to predict **Absolute Zero** and establish the **Kelvin Temperature Scale**?
* Kinetic Theory of gases.
* What is **The Ideal Gas Law** and how can I use it?
* Gas laws and Ideal gas law:    PV = nRT, Gauge pressure and absolute pressure.

**Chapter 15: The Laws of Thermodynamics**

1. Laws of **Thermodynamics: Zeroth, First, Second, and Third.**
2. Thermodynamic Processes: Isobaric, Isothermal, Isochoric, and Adiabatic.
3. First law of thermodynamics: ΔU = Q – W
4. Work done by a gas: W = P∙ΔV (Isobaric process) (Isothermal process)
5. Heat engines, refrigerators, and heat pumps.
   * Coefficient of performance,   
     Entropy, *S*. 