

**Due Date: September 15, 2010**

Instructions:

- You can submit the assignment by email or in person.
- The assignment needs to be typed, except for equations, calculations, etc. You may not “cut and paste” from any sources.
- All diagrams and figures that accompany the assignment should be hand drawn—no “cut & paste”.
- Assignment will be considered as late if it arrives **15 minutes past** the start time of the class printed in **CCSF Fall 2010 Class Schedule**
- Late assignment will be marked down by 50%.
- No late assignment will be accepted beyond 7 days.

Problems: [35 Points]

1. Exploring the properties for Blackbody Radiation
  - a). Star A radiates most of its radiation at 1000 nm. What is the surface temperature of Star A compare to the Sun (which radiates most of its radiation at 500 nm with surface temperature of 5,800 K)?
  - b). What is the Energy-Flux of Star A compare to the Sun?
  - c). What is the “Peak/Max” wavelength of a human radiates? [Average body temperature of a human is 37 °C]

Energy-Flux from a blackbody:  $F = \sigma T^4$ , where  $\sigma = 5.67 \times 10^{-8} \text{ W / m}^2 / \text{K}^4$ , and T in kelvins.

Wien's Law  $\lambda_{\text{max}} (\text{m}) = 0.0029 / T$ , where T is the surface temperature of the emitter in kelvins

2. Chapter 2: Further Exploration 8, 24, & 25, page 61-62.