Topics: covering and reviewing radiation concepts (blackbody and Doppler shift and inverse square law)

Reading:

- Review the material from last week about the three topics listed above, including your solution to the problem from class 4.
- Read from the top of p. 197 ("The surface temperature...") to the bottom of p. 199.

Summary of work to submit:

- No work associated with this class assignment to bring to class or turn in, but *do* bring the problem from the last class (flux of sunlight on Jupiter) to Tuesday's class.

Overview:

Think about each radiation concept and how it's used in astronomy (what useful things can we measure) as you review the material from last week. The reading for this class is essentially an application of the blackbody radiation concept – an important one, that allows us to calculate (predict) the surface temperatures of planets.

Commentary on the reading, viewing, and other preparation:

The concept of *albedo* is introduced in the first paragraph. Can you state its definition? Does your intuition tell you that a planet with a higher albedo will be hotter or colder?

Note how eqn. 8.4 relates the Sun's color (what wavelengths it emits the most light at) to its temperature. We can do the same for the Earth (or any planet). Given the Earth's average temperature of about 290 K, what is the wavelength at which it emits the most light?

The inverse square law is used to find the flux of sunlight at the location of the planet. By the way, we don't *need* eqn. 8.3 and 8.5 since we can just measure the Sun's flux here at the Earth and scale it by the distance to the planet (as in the problem from Thursday, that we'll discuss in this class). However, doing it this way allows us to derive a temperature of a planet in terms of the Sun's (or any star's) temperature.

Read the sentence about equilibrium at the top of p. 198 very carefully. What would happen if the two rates were *not* equal?