Physics 104, Astronomy
Fall 2010
Midterm 2 Study Guide

I will not ask you to do any math on the exam. You are allowed to bring one 8.5" by 11" page of notes (both sides) to the exam. The exam will cover the topics listed below. The relevant chapters are listed in the syllabus.

Planetary Formation

What is the leading planetary formation theory?
Why is it successful? (what does it explain?)

Why do clouds of gas collapse?
Why happens to the rate that they are spinning?
Why does the disk form?

What was the composition of the nebula that the solar system formed from?

Why do jovian planets and terrestrial planets form in different parts of the disk?
- What condenses near the Sun? What condenses far from the Sun?
- What is the frost line?
- How does the composition of the jovian planets differ from the terrestrial planets?

What is the composition of Pluto and other objects at the outer edge of the solar system?

Light

What are the three different ways that light and matter interact?

Blackbody emission
- What type of object emits like a blackbody?
- How does the blackbody curve change with:
  - Temperature?
  - Size?
- Be able to compare two curves and discuss the differences between the objects that created them.

Emission lines (what the heck are they?)
- Under what conditions do we see emission lines?
- Under what conditions do we see absorption lines?
- What information can we get from emission/absorption lines?

Absorption
- Why does my coffee mug appear red?

Why does the spectrum of the Sun appear the way that it does?

What is Doppler shift (as it relates to light)?
Why information can I get by looking at Doppler shift?

The Sun

Why does the Sun shine?
What is the basic process of energy production in the Sun?
What is fusion and what is the Sun fusing?
Why couldn't the Sun be combusting?
How do we know the Sun's temperature?
How do we know the Sun's composition?

Stars

What is the difference between luminosity and apparent brightness?
What determines the luminosity of a star?
Know the relationship between the luminosity, temperature, and radius.
What determines the APPARENT brightness of a star?
How does the magnitude system work?

Stellar Evolution

What is a Main Sequence star?
When does a star leave the main sequence?
What is a Red Giant? What is its internal structure?
What is a Horizontal Branch star? What is its internal structure?
How does the evolution of low mass stars differ from that of high mass stars?
What is the end stage of low mass stars?
What is the end stage of high mass stars?

Distances

What are the major distance measures that we use and how do they work?
Radar ranging, parallax, Main Sequence Stars, Cepheid variables, Super Nova Explosions
What distance scale is each one useful for?