

Study Guide for Exam 2

Astronomy 105G: The Planets
Spring 2009

Exam date: Tuesday, April 14

This exam will cover the material in your textbook from chapter 5, section 5.3 through and including chapter 9. This is lectures 12 - 19. So this is from radiation spectra of matter to the geology of the terrestrial planets. Other possible material includes the labs you have done over this time span, which is lab 5 until lab 10. See the online class schedule to determine the relevant labs.

Remember that topics that may have been skipped over or gone over quickly from these chapters could be on the exam. Since you were required to read the entire chapters and encouraged to ask questions about any difficulties you encountered, all topics are fair game. But you can be sure that *if some broad topic is not listed here on this study guide, it probably will not show up in the exam.*

The format of the exam will be similar to the first exam: some combination of multiple choice, true false, short answers, labeling figures, and short quantitative problems. Bring a calculator, if you don't have one don't worry. Most or all of the problems you can do without one.

Below is a list with some explanation of the things you should be familiar with. You will not have to memorize complicated equations or constants. These will be provided if necessary. The numbers and headings below do not necessarily correspond to the numbering or labeling scheme used in your textbook.

I Light and Radiation

1. What can we learn from the light we receive from distant objects? What physical properties are associated with radiation?
2. How are radiation spectra interpreted? What are spectroscopic "lines?" How do these relate back to basic electron transitions in atoms?
3. Differences between absorption and emission and continuous spectra. What causes them?
4. Doppler effect and what it tells us

II Telescopes

1. What makes a good telescope? What are the limits of what we can see with telescopes? Angular resolution and light-collecting power.
2. Different types of telescopes and where on Earth or in space they are placed

3. Difficulties of observations with telescopes

III Overview of the Solar System

1. Relative sizes and temperatures of the planets and moons
2. Similarities and differences among all solar system objects. This includes their surfaces (craters, mountains, etc.) too.
3. Unusual exceptions to some of the general rules such as rotation direction, axis tilt, etc.

IV Formation of the Solar System

1. What are basic steps that took place for the solar nebula to become our solar system
2. Understand the concept of radiometric dating and how to apply it
3. The reasons why the terrestrial planets are where they are and why the Jovian planets are where they are. Also the reasons for the comet and asteroid belts.

V Geology of Terrestrial Planets

1. There are 3 main properties of a planet that determines most of its features: size, distance from Sun, and rotation. Some are more influential than others.
2. Heat generation (3 types) and heat loss (3 types) mechanisms in terrestrial worlds
3. How the surface area and volume of a planet influence heat loss?
4. Interesting features of the Moon
5. Characteristics of the four (4) geological processes and the signatures they leave
6. General geological structure of planets (cores, mantles, etc.)