Astronomy 161 – Introduction to Solar System Astronomy
Winter Quarter 2010 – Prof. Martini

Quiz 1 Study Guide

Please Note: While this guide lists the material I consider to be the most important, some of the other material I cover in class will still be on the Quiz.

General Advice:

Please read through the "Course Objectives" on the syllabus. These objectives are the guidelines I follow to determine the material we cover in this course, as well as the material I will use to evaluate you.

Quiz 1 will cover all of the material I have covered in class to date. This corresponds to Lecture 1 (Introduction to Astronomy) through Lecture 9 (Equation of Time).

As a general rule, I strongly recommend that you are familiar with all of the concepts I list on the "Key Ideas" slide and the "Warm Up Questions" I show at the beginning of class. The "Key Ideas" slides are also part of the lecture outlines available on the class website. I strongly encourage you to become familiar with each of these topics and understand why each is important.

Introduction to Astronomy

Distance measurements in Astronomy (AU, light year, parsec)

Contents of the Math and Units Review Sheet

Mapping the Earth and Sky

Terrestrial and Celestial Coordinates: longitude and latitude, right ascension and declination

Local Sky: horizon, meridian, zenith, nadir, measurement of latitude

Parsecs and parallax

Measuring the Earth

Early concept of the spherical Earth and physical arguments of Aristotle

Eratosthenes' method to measure the circumference of the Earth

Daily and Annual Motions

Daily motion of the Sun due to Earth's rotation, concept of circumpolar stars

Annual motion of the Sun through the Ecliptic as a reflection of Earth's orbital motion

The Four Seasons

Solstices and Equinoxes

Tilt of Earth's axis of rotation as the cause of the seasons

Phases of the Moon

Synchronous Rotation and Revolution of the Moon

Phases of the Moon and their position in the sky at different times of day

Sidereal and Synodic Period

Eclipses

Causes of Lunar and Solar Eclipses, concepts of Total, Annular, and Partial Eclipses

Relative frequency of eclipse types and relation to the line of nodes

Time and the Calendar

Lunar calendar, Solar calendar, and the development of the modern (Gregorian) calendar

Division of the year into Quarter Days, Cross-Quarter Days, Months, Weeks, Hours

Equation of Time

The Ellipticity Effect and the Tilt Effect on the length of a Solar Day

Analemma and impact on days of earliest/latest sunrise and sunset

Some thought questions:

1. Why are solar eclipses rarer than lunar eclipses?
2. How does the accuracy of the Metonic Cycle compare to the Julian Calendar**?**
3. What defines the region of the Earth referred to as the tropics?
4. How would an analemma appear different if the Earth's orbit were circular?
5. When does a waning gibbous rise and set? A waxing gibbous?
6. What are three observations that support the hypothesis that the Earth is a sphere?
7. Why does the length of the day change throughout the year?
8. How did Ptolemy's estimate of the size of the Earth influence Columbus?