AOE 4134: Homework Assignment 1
Due: Wednesday, August 30, at beginning of class

Complete Reading Assignment 1 and answer the following questions.

1. The Earth rotates about its axis with an angular velocity of about 2π radians per day (or 360°/day). Approximately how fast does the Sun rotate about its axis?

2. Approximately how much of the Solar System's mass does the Earth contribute?

3. What are the approximate minimum and maximum communication delays between the Earth and Mars?

4. What are the Apollo asteroids?

5. What are the latitude and longitude of Blacksburg, Virginia. Give your answer in degrees, minutes, and seconds to the nearest second, and in radians to an equivalent accuracy. Also, what is the distance on the surface of the earth equivalent to 1 second of longitude error at the latitude of Blacksburg? Give your answer in kilometers. You may assume a spherical earth with a radius of 6378 km.

6. Describe the main features of the Earth's orbit about the Sun and its rotational motion.

7. Imagine that you are standing at the front center of our classroom (which you can assume to be the "origin"), facing the rear of the room (which you can assume to be North). What are the azimuth and elevation of a point 100 meters to the North, 50 meters to the East, and 10 meters above the floor of the classroom?

8. Our class meets from 1:25 to 2:15 PM EDT. What time do we meet in UT?