Astronomy 110G **Observing Exercise** **Stargazing**

This exercise is intended to familiarize you with the use of sky maps and some aspects of the night sky. You will need your planisphere (and/or a suitable sky map*), darkness, a reasonably clear sky, and an observing location well away from bright lights. Set your planisphere so that the date and time marks line up. (Subtract an hour from daylight savings time to get standard time.) Your map or planisphere should show the sky as it appears in the early evening during September 2008. Compare map and planisphere if you have both. Note that constellations are named in all-capital letters; the other names are for stars and/or planets. A small flashlight will aid in map reading and note-taking. Observations should be conducted in the early evening.

Write up a brief summary of your observations, put your name(s) on it, and turn in at class lecture on Monday, 15 September**.** (You can do this observing exercise with a friend or classmate, but the description and write-up should be your own.)

• The first step is to find a suitable place and time for your observing session:
  * From where and when did you make the observations? (Did you have a partner? Who?)
  * What were the weather and sky conditions? (If it is cloudy, try another night!)

• The second step is to orient yourself with respect to the sky. Try facing south, holding the planisphere (or sky map) upright in front of you. East will be to your left, west to your right, and north behind you. Then raise the planisphere (with north uppermost) so it is above you; the objects on the map should then have the proper orientation with respect to objects on the sky.
  * So, how did you decide which way was south? (Lacking a compass or knowledge of local landmarks, you can, with a bit of practice, find south by using the planisphere or map alone.)
  * If you are facing south, the pole star (Polaris) will be behind you to the north, roughly a third of the way from the northern horizon toward the zenith. It sort of sits alone up there. Can you find it?

• The third step is to identify some other objects:
  * The Milky Way is the hazy "cloudy" strip stretching roughly from northeast to southwest and passing a bit east of the zenith. Find it - and describe its appearance. (The Milky Way is our own galaxy as seen from our position inside it.)
  * Pick the half-dozen brightest star-like objects that you can see. Use the map to identify them. Which objects can you identify? (Name them.) Which is brightest? Do any appear colored?
  * The planet Jupiter should be easily be visible in the southern sky. Find it and describe its appearance. How does it differ in appearance from the nearby brighter stars?
  • Where is the Moon? If you see it, describe its location, orientation and appearance.

If you wait a few hours and look at the sky again you should notice that the appearance of the "celestial sphere" has changed; stuff has moved! The Earth's rotation is responsible for this apparent motion. (Or you can add an hour or two to the time setting on your planisphere to demonstrate this motion.)

Also:
Binoculars will reveal fainter stars in star clusters and the Milky Way. They can show the brighter moons of Jupiter if you hold 'em steady. If you happen to have a pair you might go hunting for some of the star clusters, nebulae ("clouds"), and other things shown on the map. The "Double Cluster" near Cassiopeia is an easy object for binoculars. The object labeled M31 (which you might be able to see as a very faint oval patch if the sky is dark enough) is the nearest large galaxy to our own. The numbered objects (M5, M13, etc.) are a mixture of nebulae, star clusters, and galaxies; Charles Messier (1730-1817) mapped and numbered them (M1 through M109) so he wouldn't confuse these "fuzzy" objects with the comets he was searching for.

*Planispheres are available at the NMSU Bookstore. Monthly sky maps can be downloaded from www.skymaps.com