Astronomy 100- Section 2- Fall 2009

Extra Credit Observational Exercises

For this course you have the opportunity of earning extra credit by working a series of observational exercises. A maximum extra credit of 10% is possible if all of the exercises are completed satisfactorily. A description of each exercise is provided below, including the amount of extra credit that can be earned from each. For the first three exercises you can work with other members of the class, however your final report and drawings MUST BE YOUR OWN WORK. I also expect your report to reflect college level work. If you have any questions about these exercises please come see me or the class TA. Note that projects 1 and 2 will need to be started in the next week or two, so you can not wait until the end of the semester and expect to get much extra credit from these two projects.

1. Sunset Project (maximum extra credit 3%)

In this exercise you will observe the location and time of the setting Sun over the fall semester. You will need to make observations starting in late September going through early December. You should try to make an observation at least once every two weeks. Find a good observing location with a clear view of the western horizon. Draw the western horizon (placing landmarks in your drawing) and label as best you can the direction directly west. At each observation note the time and location of the setting Sun and mark it in your drawing along with the date the observation is made. Note, you can also record the setting sun using a digital camera. In addition to the drawing, you will need to write a brief report summarizing what changes you observed and explain why the setting Sun shifts over this time period. Thus, to receive full extra credit, you will need to turn in a legible drawing and a clear write-up explaining the changes you observed.

2. Sun's Elevation Project (maximum extra credit 3%)

This project involves measuring the shadow of the Sun at the time it crosses the meridian, making measurements from late September to early December. Assume the Sun crosses the meridian at 1 pm while we are on daylight savings time (EDT) and at noon when daylight savings time (ET) ends. Use a stick (standing vertically) of the same length for all measurements and measure the length of the shadow it casts. Try to make measurements at least every two weeks. A longer shadow corresponds to a smaller altitude (or elevation) of the Sun. In fact, knowing the length of the stick and the length of the shadow will permit you to compute the elevation angle (but this in not necessary, but it would be worthwhile to learn how this can be done). To
receive full extra credit for this exercise, you will need to provide a write-up summarizing clearly your measurements and describing why the elevation of the Sun is varying over this time period.

3. Lunar Phases Project (maximum extra credit 3%)

In this exercise you will follow the lunar phases over one cycle. Observe the time the Moon either rises or sets at the following lunar phases: waxing crescent, first quarter, waxing gibbous, full, waning gibbous, third quarter, and waning crescent. If bad weather prevents you from observing the rising or setting Moon on the time of these phases, observe as close in time as possible to these phases and describe at what lunar phase your observations were made. These measurement do not all have to be made during the same lunar cycle. To receive full extra credit, a write-up is required that summarizes your observations of the times of either the rising or setting Moon and an explanation as to why the Moon at these phases is rising or setting at the times measured.

4. Visit Orchard Hill Observatory (maximum extra credit 1%)

Go to Orchard Hill Observatory on one of the Thursday open nights. Make certain that you sign in with the TA while you are there. To receive full extra credit, you will need turn-in a short write-up describing the celestial objects you viewed with the telescope and what ever else you were able to observe and identify with your unaided eye. Do not wait until the end of the semester, as this exercise is weather dependent.