

Astronomy Journal Guidelines

Glue this into your Composition Notebook Journal pg 2

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The heart and soul of astronomy is observing. You must look at the sky to become familiar with the sky. Part of your experience in this class will be book-learning, but another part will be actually going out and looking at the sky yourself. Read through and find something that is of interest to you, and then go out and see the sky!

Observing Safety

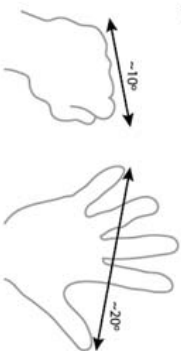
Many of the observing projects can be done from your own back yard, but sometimes it is necessary or more convenient to find a location away from city lights. When observing at night, it is always best to be with a friend, family member or in a group. (However, you should not let someone else do your observing for you. You must make your own observations and notes!) If you need help coordinating the opportunity to observe at night with a group, see your instructor. Do not observe alone at night if you do not feel safe!

Observing Equipment

The equipment you'll need depends on which observing project you are doing, but may include several of the following:

1. **Eyeballs.** There's no substitute for these! Be sure to treat them well and, when necessary, give them time to adapt to the dark.
2. **Pen, notebook, observing records.** The point in observing is to record what you see. Records should not be kept on scraps of paper, on the backs of old phone bills, or on paper bags from McDonalds. Keep your records organized in your composition notebook! Sketching is sometimes required; your personal preference may be to use pen, or perhaps your artistic streak demands you use pencils. Make sure you bring extras.
3. **Warm clothing.** Even during the summer months, it can get cold out in the dark. Always take several warm layers of clothing, a heavy jacket, and hat and gloves with you when observing. Additionally, in the winter warm footwear will be valuable for keeping you warm.
4. **Redlight.** To see the night sky effectively, your eyes must adapt to the darkness for at least 15-20 minutes (your pupils dilate, and the chemicals in your eyes change their balance to see dim low contrast objects). To maintain your "dark adaptation", you should use a red flashlight to see your notebook and find your way around your observing area. Ordinary flashlights can be made into redlights by covering the lens with several layers of red cellophane. Red LED keychain lights are also reasonably easy to find. There are also a variety of redlights commercially available for the amateur astronomy community.
5. **Angle measurers.** In some instances you will need to measure precise angles for the observing projects; each project will describe how to do this if needed. If angles are required but no equipment is described, the angles can be estimated using the equipment you have with you—your hands! Figure 1 illustrates the common angular estimates used in astronomy.
6. **Binoculars, Telescopes, Cameras.** While these expensive tools aren't needed for most the projects, you can certainly use them if you wish. If you have one of these items and want to know what you can do with it, please consult with your instructor. A 35mm SLR film car with a locking cable release (or built-in shutter lock) is an excellent tool for photographing trails. Digital cameras can also be used for astrophotography (though not for long star trails as they are capable of taking time exposures of several seconds. A sturdy tripod is needed in either case.

Figure 1: Traditional angular estimation for field observations in astronomy (with hand held arm's length).



Creating Useful Observing Records

The most important element of recording astronomical observations is making sure all the critical information gets written down and can easily be found at a later time when you go back to your records for analysis.

Certain information is always needed with every observation you make. This includes:

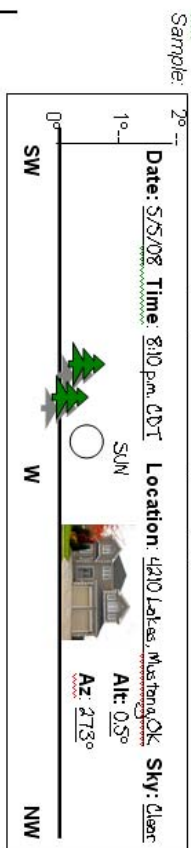
1. **Date & Time.** Far and away, this is the most important data relating to your observations. Make sure you indicate AM/PM, what time zone you are in, and whether daylight savings is in effect. If you are observing at night, make sure to be aware that the date changes at midnight.
2. **Location.** Where were you when you made the observations? On the corner of Forester and Mustang Rd? At the Gazebo at Wildhorse Park? Or a certain latitude and longitude? Wherever it is, it is important to know where you were when you looked at the sky. This type of information is often critical in the analysis of data.
3. **Sky conditions.** What were the skies like when you were looking? The most valuable information is the conditions (cloudy, hazy, clear), the light pollution (dark, nearby city, in town), and sometimes the "seeing" (steady skies, lots of twinkling, etc.). Light pollution is often indicated by what can be seen (can you see all the stars in the Little Dipper? Is the Milky Way visible? Can you see the Andromeda Galaxy with your naked eye?).

List of Required Observation Projects for your Journal

WILL BE GRADED AT MID-TERM AND END OF SEMESTER!

1. **Sun Journal.** Observe the position of the rising or setting sun every week over a period of a few months. For this project you need to be at the same location for each observation. You'll need to make at least one observation every 10 days, being somewhat flexible about the exact day to allow for cloudy days. This is a long-term project so be sure to **start now!**

Sample:



2. **Moon Journal.** Observe the phase of the moon as many days as possible over the course of a month. For this project your observations can be made at the same time of day when the moon and the sun are both visible, and from any location. Once the moon is visible in the morning (after the full moon), you may change the time of day to near sun-rise time. You must make at least a dozen observations, spread over an entire month. **Start on:** _____

Sample:



3. **Big Dipper I.** Observe and sketch the motion of the Big Dipper during the course of a night. This project takes one long night (Every 2 hours from dark until 6 hrs later), and requires a clear view of the northern sky. It's best to make all observations from the same location. You can optionally use a digital camera on a tripod instead of drawing sketches. (Use same format as the samples above)

4. **Big Dipper II.** Observe and sketch the Big Dipper at the same time of night every 1-2 weeks over the course of 3 months. This project requires only a few minutes at a time, but you must make your observations at the same time of night, once every week or two, over a period of two months or more. **Start now!** It's best to make all observations from the same location. You can optionally use a digital camera on a tripod instead of drawing sketches. (Use same format as samples above)