

# Astro 1810 - Notes on Observing

Attach this sheet to your observing Logbook. Taking records of your observations will help you remember what you did, what you saw, where you were looking, and important details.

## 1. Before you begin:

In order to make your observing records useful at a later time, you should get into the habit of recording all pertinent secondary information such as:

- a) Time (start of observations, time of transient events, end of observations)
- b) Place of observation (where are you? Which direction are you looking in?)
- c) Weather conditions
- d) Cloud cover (0 to 10 tenths cover)
- e) Equipment used

Most of the above information need only be recorded at the beginning of an observing session but any unusual observation of unrecognized objects or transient events should have a careful note of all data at the moment of observation. An example of the information to be recorded is:

Monday, 21 September 2015, 8:45 PM CDT

Glenlea Astronomical Observatory

10 C, NNW 10 kph, 2/10 over western horizon towards the north

Visual observations -- naked eye and 7x50 Nikon binoculars.

2. Record all observations that you make: both during the observing sessions and on your own. Make notes on what you see, what is being asked and anything extra. All observations such as meteors, aurora, moon, planets, satellites, anything that you find interesting or puzzling should be included.

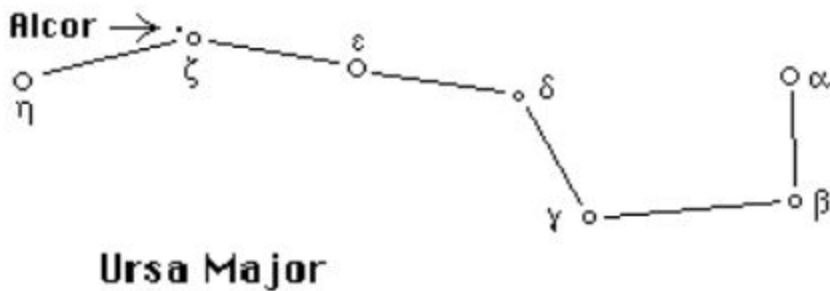
3. The main part of your observing logbook will be detailed drawings and written descriptions of what you have observed. These observations will be very important for you. You are to record in drawings and written word all that you have observed. That means: relative positions of objects (to one another and/or to terrestrial markings), relative brightness, colours, sizes, changes with time in position or brightness (if any), etc. It will be difficult to remember to look for all these things and even more difficult to remember to record them. But both are easier than trying to remember at the end of the semester or years later. Take careful notes!

4. You will be asked to learn the positions, orientations, etc., of many constellations and stars. Star guides (e.g., planisphere) and maps should be used at first but eventually you will be expected to have memorized positions.

5. The observing Logbook is to be well organized and neat. This will require care because all your observations are to be recorded when they are made, in the field, not later at your leisure in an armchair in front of a warm fire. All observations, drawings and written descriptions, are to

be recorded immediately in your Logbook. This has great advantages: first, in accuracy and second in the fact that your work is completed immediately. Be sure to work carefully.

6. You will be given instruction sheets for each observing session. Attach these sheets to your book immediately before the report on your observations. Diagrams should be large, minimum half a page. Bright stars should be drawn as bigger circles, and small stars as smaller circles. Try to get the relative brightness sizes as accurately as possible. An example sketch of the constellation Ursa Major is given below. Note that small circles indicate the fainter stars while brighter stars are shown by larger circles. Only the brightest stars are shown indicating the asterism of the Big Dipper. The stars are labelled by their Greek letter and the stars are connected by line segments to emphasize the asterism. Give a written description of each observation. Answer directly in the Logbook any questions asked on the instruction sheets.



7. You will be asked to measure angular distances between objects in the sky. A simple and handy method for measuring angles on the sky is to use your hand and fingers as a cross-staf. Hold your arm fully extended outward from your body. Look from one eye to the edges of your clenched fist. The angle that the edges of your fist make at your eye held this way is about 10 degrees. You are to determine the angular size of width of:

- a) the first knuckle on your index finger
- b) your fist
- c) the tip of your thumb to the tip of your little finger.

You are to determine these sizes before your first observing session. Begin by measuring the following dimensions:

- a) Width of the first knuckle of your index finger
- b) Width of your fist from edge to edge (from the index finger to the little finger)
- c) Length of the span of your hand from the tip of your thumb to the tip of your little finger when you spread your hand as widely as possible
- d) Distance from your eye to your hand held outstretched from your body.

You compute the angular size of the first knuckle by dividing the width from measurement a) by the distance from your eye measured in d) and multiplying that quantity by 57 degrees. This gives you the angular size in degrees. That is, the angular size in degrees is given by:

$$(\text{Width of the first knuckle of index finger} \times 57^\circ) / (\text{distance from eye to the first knuckle})$$

The sizes you get will be about 2.5°, 10° and 20° (Note the sizes may be as small as 1°, 5° and 10° depending on the size of your hand and length of arm). Be sure to record all your measurements in your logbook along with your calculations.

8. The Greek alphabet is given below. The brightest star in a constellation is alpha, the second brightest is beta, the third brightest is gamma, and so on.

α - alpha	β - beta	γ - gamma	δ - delta	ε - epsilon	ζ - zeta	η - eta
θ - theta	ι - iota	κ - kappa	λ - lambda	μ - mu	ν - nu	ξ - xi
ο - omicron	π - pi	ρ - rho	σ - sigma	τ - tau	υ - upsilon	φ - phi
χ - chi	ψ - psi	ω - omega				

NOTE: Ursa Major/ The Big Dipper is an exception to this rule, as you can see in the diagram above. Its stars are labeled in order of placement, not brightness.