A APPENDIX: FILLING OUT AN OBSERVING FORM

To record most of the telescopic observations you will make in this course, you will be expected to use a **standard observing form.** You can photocopy the standard blank observing form, (figure 1), or pick up copies in the Observatory Support Office. Be careful in filling out observing forms, as they will be graded according to relatively strict standards. Before you begin filling in the details, fill in:

Lab — which lab this observation is for

Observer — your name

Before going to the telescope complete the top section of the form. You will be much better prepared for lab if you do this at home or in the library, prior to coming to the Observatory.

For each object fill in:

Object Name — One or more of the formal names the object may have

Physical Nature — e.g. double star, galaxy, planetary nebula, etc.

Features to Observe — A brief reminder of what you are expected to observe, given the limits of your intended instrument on a typical night. Short descriptions of each object are given in the Manual. For more detailed descriptions, see the various reference books listed below (these can all be found in the Astronomy Library):

The Finest Deep Sky Objects, Mullaney and McCall

Deep Sky Objects, Newton

Burnham's Celestial Handbook, Vols. I, II, III

Planned Observing Date — The date at which you plan to make your observations on. Note that this date may be different from when you actually make the observation. Things may happen after all.

Coordinates — Look up the Right Ascension (RA) and Declination (Dec) of the object in the Manual or one of the supplementary references. Use coordinates with "epochs" near the current year. For solar system objects, the coordinates of the object should be specific for your planned observing date. You will need to look up the coordinates at one of the following websites:

Minor Planet Center (http://www.cfa.harvard.edu/iau/MPEph/MPEph.html)

NASA Horizons (http://ssd.jpl.nasa.gov/horizons.cgi)

The observatory code if you are observing at the nightlab or McCormick is 780. If you are observing anywhere else you will need to enter the coordinates of your observing site.

Local Time of Transit — For the date you plan to observe, use a sky wheel to estimate the time of transit of the given object. Indicate also the timezone(EST or EDT).

Finding Chart — While a computer-controlled telescope may greatly assist you in finding your object, it is still very important that you know that the telescope is pointing in the correct direction. For this purpose, a finding chart is to enable you to verify that the telescope is pointing in the correct direction. Draw a sketch of the region surrounding the object from Norton's/Edmund Sky Atlas. Be sure to include the bright stars(up to third magnitude) surrounding the object, and note the name of the constellation(or nearby constellations) the object is in. Be sure to *indicate the orientation of the cardinal directions (north, south, east and west)* on the chart. A useful test of the quality of your chart: *would another student be able to verify that the telescope is pointing in the correct direction using it?*

Now you're ready to go to the telescope.

At the telescope, you will complete the form and make a sketch of your observations. You'll need to fill in the following.

Group Members — others you are working with for this particular observation

Temperature — Use the thermometer at the Student Observatory. Estimate the temperature if you are not at the observatory.

Wind — estimate the speed and direction

Scattered light — estimate the extent to which streetlights, moonlight or other light sources interfere with your observation

Seeing — a measure the steadiness and size of the star images given in seconds of arc. In the Introduction to Small Telescopes Lab, you will learn to make quantitative estimates of seeing by estimating the image diameters ("seeing disk") or image motion from a close double star of known separation. With experience, you should be able to estimate seeing without such an elaborate procedure. However, you must quote seeing in seconds of arc. General descriptions such as "good", "fair", or "excellent" are not acceptable.

Transparency — a measure of sky clarity. Note the amount of cloud cover, what type of clouds (low thin clouds, high haze, thick cumulus, etc...) are present and if they effect your observation. A quantitative way to estimate transparency is to give the magnitude of the faintest star you can reliably detect with your naked eye (e.g. use the stars in the "pan" of the Little Dipper = Ursa Minor). The naked eye can see up to 6th magnitude under perfect conditions, but typical conditions at the nightlab area will have a limiting magnitude of 3.

Date of Observation — date of actual observations.

Location — where observations are being done.

Telescope — size and type of telescope you use, e.g., an eight inch Schmidt-Cassegrain. Include the identifier of the telescope: e.g. A, B, etc. If using binoculars, give the size (e.g. 7×35).

Eyepiece Used for Sketch — focal length (F.L.) of eyepiece. Each eyepiece has its focal length in millimeters marked on it. If using binoculars, give the field of view of the binoculars *used to make the sketch.*

Magnification — Magnification = (F.L. of scope)/(F.L. of eyepiece). The 8" Schmidt Cassegrains used in the student observatory have F.L. = 2000 mm.

Comments — note colors, shapes, relative brightnesses, rough numbers of stars, difficulty of object to see, aesthetics, etc. Emphasize features which are impossible to draw or special conditions which affected observations. You should write thoughtful comments on each observation you make.

Sketch — the large round circle is to represent the field of view; draw the object to scale inside this. Sketches require a fair amount of work. They must be done carefully and accurately. This is to be a scientific drawing, not an "artist's impression."

Tips on making sketches:

1. Use pencil. Draw a "negative" image, with darker pencil representing brighter regions. Try to capture all the main features.

2. Draw to scale, with the given circle representing the edge of the field of view. Carefully pencil-in dots for the stars in their correct relative positions. Represent relative brightness correctly. Draw faint stars as small pinpoints and brighter stars as darker, but not too much larger, points.

3. Label the sketch N, S, E, & W; use the technique described in the Introduction to Small Telescopes Lab to find the directions in the telescope field.

4. Double check your sketch for accuracy. All the stars seen should be represented (if not, *explain why it would not be feasible to do so*). Brighter stars should be distinct from fainter stars. Distances between stars should be scaled appropriately. Nebulosity or extended features should be shown with correct outlines and shading to represent brightness.

5. Make notes on the drawing if you wish. If the object is small, you may want to make an additional, enlarged drawing to show details.

6. The sketch is the most important part of the observation in the early labs, so do a good job. See Figure **??** for a sample sketch.

Pledge — By signing the pledge you signify that all the work on the page is your own.

Lab TA (initials) — when you've finished your observations have the TA sign your forms. **Only work signed or initialed by a TA will be graded.** NOTE: the TA's signature only verifies the date and time; it does *not* indicate that you have done the work satisfactorily. If you have questions about the quality of your work, ask the TA's directly about that.

Recopying your records: Your records/sketches must be made at the telescope *at the time you make your observations*, not later. Human memory is fallible. If you wish to recopy your handwritten notes more neatly, you may do so, provided they are copied word for word. In all cases, *your original records must be turned in* together with the copies. *Do not recopy or modify sketches.*

Group work and collaboration: **REREAD THE PARAGRAPHS ON INDEPENDENT WORK IN THE GENERAL INFORMATION SECTION OF THIS MANUAL.** You may collaborate in setting up the telescope, adjusting it, and finding objects. But each person is to make and record his/her own observations. You may not collaborate in any way on record keeping.

The following page shows an example observing form (Figure **??**) after a successful observation. Note the many comments and the carefully drawn sketch. Also remember to add the compass directions outside the sketch area. Figure 1 is a blank observing form which should be used to photocopy.

Lab: Observer:

Planning Section - To be completed before observing

Object Name:

Physical Nature:

Features to Observe:

Planned Observing Date: / /

Coordinates: RA -
Dec -
Local Time of Transit -

Finding Chart:

Data Section - To be completed during observing

Group Members:

Sky Conditions:
temperature -
wind -
scattered light -
seeing -
transparency -

Date of Observation:

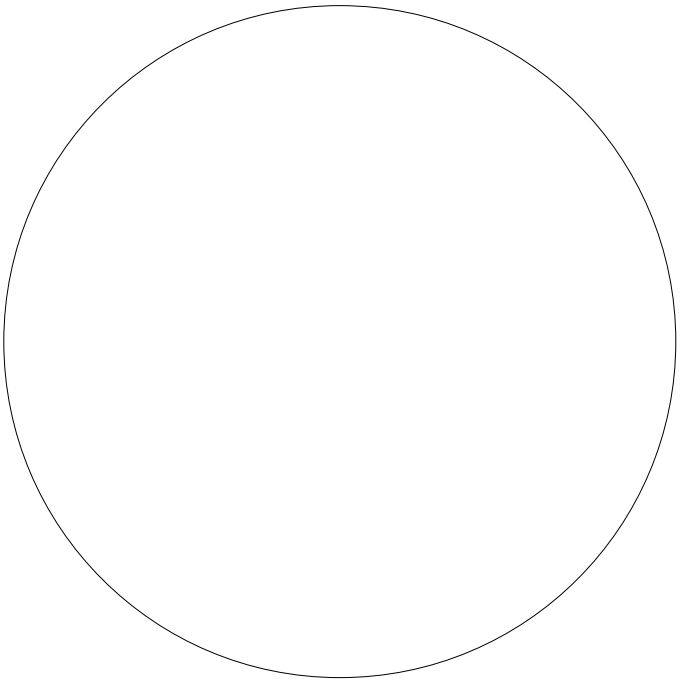
Location:

Telescope:

Eyepiece used for sketch:
(or FOV for binoculars)

Magnification:

Comments:



Pledge:

Lab TA Initials:

This original must be turned in with lab report

Figure 1: Blank Observing Sheet