General instructions:

Before writing each lab report, carefully reread the handout associated with the lab to remind yourself of all the details of the lab. Then look through your lab notebook to find all the observations you made for the lab. When writing your report, imagine that the reader is a fellow student not in the class. The report should describe in detail what you did and why you did it. The discussion section should explain how the results compare to what was anticipated or predicted. Pertinent calculations should be shown in detail, starting with the input values and showing intermediate steps so it can be understood the result was obtained (i.e., show your work, don’t just state results). Figures for the report should be xeroxed or scanned from your lab notebook. Figures should then be numbered (Fig. 1, Fig. 2, etc) so that you can refer to them in the text of the lab report. The figures themselves can be embedded within the report or appended to the end. Do not redraw figures! Be sure to include an estimate of uncertainties as relevant. Please type your report. Any equations may be written in by hand.

Typical contents of a lab report:

(1) Abstract
A single paragraph summarizing succinctly the purpose, methods, and the results of your study. The abstract does not need to include much background information but it must summarize your results.

(2) Introduction/Background
A minimum of one page (usually more) of background information that is pertinent to this lab. Possible elements include information about the nature of the objects being studied or observed, technical background necessary to understanding and interpreting the results and/or related to any computations or analyses you will be doing in the report. This section should draw on a combination of your class notes, lectures, readings from the textbook, and any outside research as relevant.

(3) Objectives
A paragraph or two summarizing the purpose of the lab. See your lab handout for guidelines, but do not simply copy the wording in the handout. Use your own words.

(4) Methods
A paragraph or two explaining how you will go about achieving the objectives of the lab, including a description of the instruments and any other tools you used you used and how you used them.

(5) Data
Describe the data you collected in detail. If the lab involved making observations with a telescope, you should be referring to figures (sketches made at the time the observations were made) by number (Fig. 1, Fig.2, etc), explaining what the reader should see in each one. If the lab involved using pre-existing data, describe the data in detail, and provide information about the telescope and instrument used to collect it.

(6) Analysis and Results
If the lab involves data analysis, describe your analysis methods here. Then present your analysis, using those methods, along with the results of that analysis. Show all the steps in your work.

(7) Discussion and conclusions
Comment in as much detail as you can on the results you obtained. Were the objectives achieved? Did your results match any predictions that were made ahead of time? What did you learn from the lab? How might you apply your results to help you with future observing or data analysis? What more could be done to pursue the topic further?

IMPORTANT: include footnotes to all texts, papers and url’s of any web pages used for your report.