

ASTR 351L - UH@Hilo

Dr. Steve Mairs

2019, Spring

Lab Report Writing and Grading

A set of guidelines and useful information

The dreaded lab writeup. It may feel tedious to go through the process of writing up your results when you feel that you understand the concepts being presented, but being able to communicate effectively is a very important skill to have. This applies whether you want to be an astronomer or simply land a job in most fields. Writing takes practice. Part of the reason why you are doing write-ups in this course is so you may brush up on these very transferable skills within a scientific setting. More importantly, by writing up a good lab report, you will be able to process the material you learned more thoroughly and articulate your thoughts more clearly. In my personal experience, I have gained a lot of insights into my own research while writing it up in a paper or a thesis. In addition, one day you may discover the most amazing thing anyone has ever heard of... but if you haven't honed the necessary skills to tell people about it, your research will have much less impact.

On the following page is an outline of how I would like each assignment written. Please follow this guideline where applicable.

If you have any questions or concerns, please email me at:

s.mairs@eaobservatory.org



Laboratory Write-Up

1. Objective/Purpose – Briefly describe the aim of this assignment. This does not have to be much longer than one or two sentences: what is the goal?

2. Introduction/Theory – Introduce the assignment by offering a bit of context; i.e. a brief summary of the background of our project. Answer the question: “why should I care?” I’m not looking for the next great American novel, but a half a page to three quarters of a page (12 pt. Times new roman font) would be ideal. Include references.

3. Observations – Describe the observations being used. Give credit to the Principal Investigator(s) or Survey Team. Note the instrument used, the time, date, observation numbers, project code (if there is one), the source, the coordinates, the total exposure time, the airmass, the weather (precipitable water vapour), and any other information you think is important to include. This is also a good place to note any highlights about the data reduction... unless the whole report, itself, is focussed on the data reduction, of course!

4. Procedure – Briefly describe the steps you took to complete the assignment. Bullet points are fine, but include a reasonable amount of detail so that you could repeat this experiment in ten years.

5. Results – Present your results and graphs in a neat and easy to read format. Please show all the calculations and assumptions needed to obtain the results. If multiple calculations of essentially the same style are performed, you only have to show it once as a “sample” calculation. Make sure you include the units!

6. Discussion/Conclusions – Answer all questions in the assignment. This section will be the majority of your grade. Discuss the significance of the relevant graphs and tables being presented. What do they imply? Do the results fall within your expectation? Why or why not? Think about the assumptions that you have made and comment on the uncertainties. Isaac Asimov once said, “the most exciting phrase to hear in science, the one that heralds new discoveries, is not ‘Eureka!’ but ‘hmm...that’s funny...,’ so feel free to write down something that’s exciting or funny to you, and make a brief comment! Who knows?! You might discover something new!

7. Tables/Figures – Keep it neat, make them easy to read and to find. Please label each table and figure, ensuring the captions describe the information with sufficient detail.

8. References – Mention which information you have to look up and where you found the information. Don’t just copy a source verbatim though, because I am a champion Googler and plagiarism is very...very bad ;). The format of the reference doesn’t have to be formal or any specific style, but it has to be easy to read. If you want to conjecture something on your own, make sure to be clear that it is your own thought.

Labs should be typed. *Please don't stress out about the length.* If you have followed the guidelines above, that's all I'm looking for - I understand you have other classes also asking you for assignments, so I don't want this course to add stress to your life.



Grading

Assignments are always marked out of 10. The maximum mark you can get after performing all the required steps in the lab, answering all the questions correctly, and having a perfect write-up is 9.5/10. To get a 10, you need to go a little beyond what the procedure tells you to do. It's your choice how you wish to do this! Note, I mark in "quarter" and "half" points. The relative weighting of each assignment varies depending on the amount of work that goes into each.

Schedule/Assignment Weighting (Subject to Change!)

Assignment	Date Began	Date Due	% of Course
SCUBA-2: Data Reduction	Feb 15th	Feb 22nd	5%
SCUBA-2: Clumpfinding and Additional Data Sets	Feb 22nd	Mar 1st	10%
SCUBA-2: Variability Studies (Dr. Tetarenko)	Mar 1st	Mar 8th	10%
Dr. Tetarenko II	Mar 8th	Mar 15th	10%
SCUBA-2: Polarisation and Magnetic Fields	Mar 15th	Mar 29th	10%
HARP: Data Reduction/CO Subtraction	Mar 29th	Apr 5th	10%
Proposals, MSBs, the JCMTOT and Safety	Apr 5th	-	-
Design a SCUBA-2 Project	Apr 5th	Apr 26th	15%
A Night at JCMT	Apr 11, 12, 13, 14, 15	May 3rd	15%
Design a HARP Project	Apr 5th	May 3rd	15%

Cheers,
Steve