

ASTR101 Lab Syllabus

Purpose of Lab

The ASTR101 Labs are intended to let you work through some key projects that astronomers have done to advance our state of knowledge. In these labs, we will emphasize how observational data can be effectively used to study the Universe. Measurements are never perfect, and this fact leads to real and unavoidable uncertainties in the determination of physical quantities. We hope that lab will help you gain an appreciation for the careful and detailed measurements that scientists make. Lab, like lecture, is not about memorizing miscellaneous astronomical facts. Recurring themes in these labs include

- i) How do we know how far away and how big things are?
- ii) How do we find patterns in data? and
- iii) How do we use these patterns to predict things?

We emphasize logical thinking, independent discovery, and teamwork. Labs start close to home in the Solar System and gradually work their way outward to the edge of the Universe, just as lectures do. Sometimes lectures will be a little ahead of labs and sometimes labs will be a little ahead.

Lab Manual

Buy a copy of the Lab Manual and bring it to each lab meeting - you will usually need to tear pages from it to hand in. If you lose your lab book, you must buy another. If you forget your lab book, you may use one of our lab write-ups for a 2 point penalty. There is a packet of photographs in your lab manual. **Put your name and section number on the packet and give it to your TA now.**

Lab Reports

It is best to read this week's lab before coming to class. Never write in your lab book outside of class; all work must be done in class. Your lab report must be your own work. We expect you to do your own calculations and answer questions in your own words. Most weeks you will work with a partner to take data; these data, and these data only, may be copied to both your lab report and your partner's. Each lab counts for 15 points. **All lab reports must be turned in by you in person to your TA at the end of your lab period.**

Missed Labs

The university recognizes these excuses for missing class: religious holidays, university-approved travel or activities, illness, and compelling circumstances beyond your control. Compelling circumstances include, for example, car trouble or a death in the family. If you must miss your lab and want the chance to make it up, you should contact your TA by email **before your lab meets**, at all possible, so that you can arrange to do the lab during another lab session that week.

- If you contact your TA by email within 48 hours after missing a lab, you will need to explain the reason for your delay in contacting them, in addition to the university recognized excuse for missing the lab.
- If you fail to contact your TA by 48 hours after a missed class, **your absence is automatically unexcused**, unless you have a university approved excuse for the entire time since the missed lab.

- If your TA approves your excuse, we will try to have you make-up the lab in the same week as the one that you missed. If that is not possible we will have lab make-up dates at the end of the semester: Monday and Tuesday May 9 and 10. .
- **An unexcused absence for a Lab results in a zero on that lab.**

Academic Honesty

The labs can pose a special challenge for defining the difference between working with a partner and copying your partner's work. The rule of thumb is: you should never mimic a copy machine; explanations and sentence answers that you put onto paper must be in your own words. The following are a few examples to help you see the difference.

- You are making measurement in a lab and the instructions tell you to work with your partner to make the measurements. You both write down the same numbers for the measurements. **THIS IS OK.**
- You and your partner talk about a question that you are both having a hard time understanding, you even has the TA for help and she explains what the question is asking to both of you and you talk about possible answers. Then
 - Your partner writes an answer on her lab page and you copy it on to your lab. **THIS IS NOT OK**
 - OR, you and your partner then write answers onto the page in your own words. **THIS IS OK**
- You come into lab late. Your partner has already started on the lab – for the past 30 minutes. In order to catch-up, you copy your partners answers from the first 30 minutes and then proceed with the lab. **NOT OK.**
 - What should you have done in the above case? Ask your TA what to do. The TA may tell you to do all of the work yourself; the TA may tell you to copy the measurements from your lab partner and answer all of the other questions yourself. The **IMPORTANT** thing is that by following the TA's instructions – you will avoid getting in trouble.
- Your roommate took ASTR101 last semester. You want to be efficient so you copy your roommate's lab onto your lab before you come to class. Then in class you can do a few measurements to get the idea of the lab. Whizz through the lab and get done early. **NOT OK**
 - A variant on the above scenario is that you bring your roommate's lab with you to lab as a check on your work. You do the lab, comparing your answers with your roommate's lab. **NOT OK**
 - Any variant on this scenario. **NOT OK**
- You don't understand a part of the lab so you ask the TA for help. She explains the hard part and helps you formulate answers to the lab questions. You then write down what you think is the right answer. **THIS IS OK!**

When in doubt, talk to your TA during lab. S/he will give correct guidance on how remain on the right side of the street.