

# PHYS 3368 - Lab

Spring 2015

## Instructor

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## General Information

### Description

Astrophysics is the modern scientific branch of astronomy that deals with the physics of the universe. If you go to an American Astronomical Society meeting, many attendees might refer to themselves as “astronomers” but what they’re really *doing* is astrophysics. We will be primarily focusing on the methods used by astronomers to collect the data necessary to do meaningful work in the field of astrophysics.

### Expectations and Goals

There will be a total of seven labs for the semester, of which at least one will be an actual observation that you make. The labs may involve experiments in the classroom, outside, or on the computer. Students will work in groups of two, but each student must turn in their own lab/observation report. You will need to turn in a report for each lab/observation you do. These reports are due by noon the following Monday (one week) after the lab/observation is performed. Your entire grade in the lab (20% of your class grade) is based on your reports. They are to be turned in to my mailbox in the main physics office, or emailed to me in only one of the following formats: .doc, .docx, .pdf, .rtf, or high resolution .jpg or .png. Whatever the case may be, it is your responsibility to ensure that the report is legible!

## Course Schedule

Lab Number	Lab Date	Report Due by <u>Noon</u> on
Lab1	January 26	February 2
Lab2	February 9	February 16
Lab3	February 23	March 2
Lab4	March 16	March 23
Lab5	March 30	April 6
Lab6	April 13	April 20
Lab7	April 27	May 4

### Observation Reports

On the nights that we perform an observation, an observation worksheet will be handed out to each student. You will need to fill these out during the observation so be prepared with a pen or pencil, and something to write on like a binder or notebook. These will also include some supplemental questions that can be filled in later. They will be due the following Monday by noon, as per the Course Schedule described above. You will not need to create a separate lab report.

## Lab Reports

If we are not observing, you will need to create a lab report. Each student is to create his or her own lab report. They are to conform to the following format:

Title - You will write the lab number, date of the lab, and your partner's name

Abstract - This is NOT the purpose of the lab. This is a laconic summary of what you did, your results, and any relevant error analysis. It is common for this to be written last.

Introduction - THIS section can be used to describe the purpose of the lab. Also, include relevant equations or principles that you are using or testing.

Procedure - Discuss the apparatus and equipment you used, the least significant figures available on your instruments, etc. Then detail how it is you actually came by your data. Write about what you actually did to take measurements.

Results - Put your results in tables, graphs, charts, etc, as described in the handout. Make sure you refer to the relevant equations you described in the Introduction (i.e. "We used Equation 1 to determine the wavelength, shown in Table 4").

Discussion & Error Analysis - Comment on your results. Are they surprising? Are they exactly what you thought they would be? Compare your results to the expected values (if any) and comment. What could you do to improve this next time? What further information would you like to know, based on your results? This should be the most verbose section of your entire lab.

## Additional Information and Resources

### Course Homepage

<http://www.physics.smu.edu/cooley/phy3368/>

### Significant Figures

Please see Dr. Cooley's significant figure worksheet:

<http://www.physics.smu.edu/cooley/phy3368/sigfigs.pdf>