

ASTRONOMY 109: SPRING 2006 SYLLABUS

Meeting times: Thursdays 6:00-8:40pm

Meeting location: Room PA215, occasionally PS256

Help Room Hours: (In PA-215) Thursdays 5:00-6:00pm, by appointment, or stop by PA228

Instructor: Phil Rosenfield

Office: PA-228

Contact: Email: philrose@sciences.sdsu.edu (best bet), Office ph: 619.594.1335

Section Website: <http://www-rohan.sdsu.edu/~rosenfie>

ASTR109 Website: <http://www-rohan.sdsu.edu/~rosenfie/astr109>

Text: Astronomy 109 Lab Manual by Department of Astronomy, SDSU

Prerequisites: ASTR101 (or currently enrolled), Lower level GEs

Materials: Notebook, scientific calculator, access to a computer is necessary outside of class.

INTRODUCTION

In the 16th century, Johannes Kepler used data recorded by Tycho Brahe. The planetary positions were so accurate that Kepler was able to deduce the Sun centered model of the Universe was not just a mathematical trick: it was reality. One of the many things you will confront in this course is part of that data set; allowing you to see the shape of Mercury's orbit as an ellipse with a focus being the Sun. You will also read some mythologies that describe the constellations you will be learn to point out to your friends. Throughout the semester, you will study the light that comes from a star and know for yourself that star matter is also found on Earth. You will study the Hertzsprung-Russell diagram, a professional astronomical tool that reveals much about a main sequence star just by looking at it. You will revisit the 1500 years of western history that assumed the Earth was the center of the Universe and understand how that theory is still useful, though incorrect. The class will trek up to the Mount Laguna Observatory and see a darker sky than is usually available surrounding bright cities.

TENTATIVE LAB SCHEDULE

- 1/18 Introduction & Seasons
- 1/25 CLEA - Sun Spots
- 2/1 The Celestial Sphere
- 2/8 Scale of the Solar System
- 2/15 Planetary Orbits
- 2/22 CLEA - Revolution of the Moons of Jupiter
- 3/1 Distance to a Star
- 3/8 Mount Laguna Observatory
- 3/15 Hertzsprung Russell Diagram
- 3/22 Prism Spectrometer/Index of Refraction
- 4/5 Globular Cluster Lab/Great Debate
- 4/12 Modern Sky Survey
- 4/19 CLEA - Hubble's Law
- 4/26 Astrolabe
- 5/4 Astronomy Jeopardy Portfolio Due

LOGISTICS

Lab Exercises: I will introduce each exercise in the beginning of class and you will have until the end of the period to complete it. Outside of class, you will complete a "lab report" to be turned in at the beginning of the next class. Each lab is scaled equally; there will be 15 labs. The lowest lab grade will be dropped from the calculation of your final grade. Please see the instructions for lab reports.

Portfolio: You will combine five of your lab reports into a portfolio due at the end of the semester. The portfolio will include a report that represents (a) Your best work; (b) your most interesting work; (c) your most improved work; and (d) your favorite work. Include a letter describing why each particular lab was included and what it demonstrates. No overlapping of reports-five separate reports are expected. DUE: Beginning of class, May 4

Field Trip: There is one mandatory field trip in lieu of a class meeting. It will take place the same night as the class and the work done will count as one lab.

Make-ups: No make up labs allowed, deadlines are final. Any issues with deadlines must be brought to my attention well in advance of the deadline for any consideration.

Extra Credit: The Ruben H. Fleet Science Center puts on a Planetarium show during the first Wednesday of each month. A 250-500 word summary and response to the program will count for a half a lab. Other suggestions for extra credit are open and must be astronomy related. Extra credit must be turned as an supplement to the portfolio. Extra credit will not be worth more than half a lab (3

Grading Scheme:

(No curves, no competition, its in your best interest to help each other learn astronomy)

Laboratory Exercises (drop lowest) 75%

Portfolio 25%

A	100 - 93%	C	76.5 - 73%
A-	92.5 - 90%	C-	72.5 - 70%
B+	89.5 - 87%	D+	69.5 - 67%
B	86.5 - 83%	D	66.5 - 63%
B-	82.5 - 80%	D-	62.5 - 60%
C+	79.5 - 77%	F	59.5

**A grade of "Credit" is awarded for work equivalent to all grades which earn 2.0 or more grade points (A through C). "No Credit" is awarded for work equivalent to all grades which earn less than 2.0 grade points (C - through F). - SDSU General Catalogue*

PLAGIARISM

Please do your own work! Any cheating, plagiarism, or improper collaboration

will be reported to the Judicial Committee. Any plagiarized, cheated, or improperly collaborated work submitted will receive a zero (this grade cannot be dropped). Any person involved with such a submission may also automatically fail the course. Simply put: Do not turn in anything that is not from your own mind without giving due credit

Word for word from the SDSU General Catalogue (pg 465): Plagiarism is formal work publicly misrepresented as original; it is any activity wherein one person knowingly, directly, and for lucre, status, recognition, or any public gain resorts to the published or unpublished work of another in order to represent it as one's own. Work shall be deemed plagiarism: (1) when prior work of another has been demonstrated as the accessible source; (2) when substantial or material parts of the source have been literally or evasively appropriated (substance denoting quantity; matter denoting qualitative format or style); and (3) when the work lacks sufficient or unequivocal citation so as to indicate or imply that the work was neither a copy nor an imitation. This definition comprises oral, written, and crafted pieces. In short, if one purports to present an original piece but copies ideas word for word or by paraphrase, those ideas should be duly noted. –*Lindey, Alexander. Plagiarism and Originality, 1952.*

San Diego State University is a publicly assisted institution legislatively empowered to certify competence and accomplishment in general and discrete categories of knowledge. The president and faculty of this university are therefore obligated not only to society at large but to the citizenry of the State of California to guarantee honest and substantive knowledge in those to whom they assign grades and whom they recommend for degrees. Wittingly or willfully to ignore or to allow students' ascription of others' work to themselves is to condone dishonesty, to deny the purpose of formal education, and to fail the public trust.

The objective of university endeavor is to advance humanity by increasing and refining knowledge and is, therefore, ill served by students who indulge in plagiarism. Accordingly, one who is suspected or accused of disregarding, concealing, aiding, or committing plagiarism must, because of the gravity of the offense, be assured of thorough, impartial, and conclusive investigation of any accusation. Likewise, one must be liable to an appropriate penalty, even severance from the university and in some cases revocation of an advanced degree, should the demonstrated plagiarism clearly call into question one's general competence or accomplishments.

INSTRUCTIONS FOR LAB REPORTS

I strongly suggest keeping a notebook in class to track what you are doing and thinking while completing the labs. You are encouraged to use your TA, textbook, and other academic materials when doing the lab report.

All lab reports must be typed and double-spaced. Please include the title of each section as I have done below. Lab reports do not need to be lengthy or overly in-depth, but they must be complete. They should be written in third person and you each must write your own lab report. Group work is encouraged, but copying is considered cheating and will be dealt with appropriately.

LAB REPORTS WILL BE GRADED BY THE FOLLOWING CRITERIA:

(a) Questions answered correctly and consistently; (b) Well written, clear writing, correct organization; (c) Demonstration of knowledge gained from exercise; (d) Understanding of relevant concepts

THE LAB REPORT MUST HAVE THE FOLLOWING SECTIONS:

Title: can be anything you wish (relating to the lab). Be creative and enjoy yourself. List all authors (group members) with your name first

Abstract: should be a brief overview of your entire report. It should include any and significant results as well as a brief introduction and summary of your methodology. This belongs at the beginning of your report, but it is often helpful if it written last. Think summary.

Introduction: should include any necessary background information regarding this lab as well as a brief history of the topic at hand. What would someone unfamiliar with this topic need to know in order to do this lab? Include the significance of this study, why it is of scientific interest, both in today's world and in an historical context. Many of these labs are taken from the history of astronomy and are not that relevant today, but were exceedingly relevant in their time.

Method: should be a step-by-step procedure of what you have done. Think of a cookbooks: First we did this...Next we did this...etc.... It can be written in either paragraph or bullet format. Be thorough, more detail is always better than less detail in this section. There should be enough details necessary for another scientist to duplicate your work. But only include the physical steps taken, save any mathematical steps for the Analysis

Analysis: should show all calculations and conversions used in the lab and explain what they mean. For labs that do not have any mathematical analyses, explain any relevant diagrams or graphs used and how one may interpret them. The results can, but need not, be stated in the analysis (if they are they should be restated in the discussion section).

Discussion: discuss the significance of your results and how they compare to your expectations of the outcome of the lab. Do not discuss your feelings about the lab. Discuss any differences between your results and those of others. Give a qualitative estimate of your error and discuss any possible sources for your error - I want something with more insight than "human error." This is also where you will answer the questions assigned from the manual. Incorporate them however you wish, not necessarily in numbered order.

Works Cited: A comprehensive list of all works used in research and writing. Use MLA, Chicago or a familiar format.

(Adapted from the Biology Dept of George Mason U)