

PHYS 1011Lab – Introductory Astronomy Lab, Spring, 2005

Class Schedule	Section 001: T	9:00 - 10:50 PM	Lind 202/215
	Section 002: W	9:00 - 10:50 PM	Lind 202/215
Instructor	Bruce Palmquist	Lind 201	963-3142
Information		e-mail	palmquis@cwu.edu
Office Hours	M, T, W, Th	1:50 - 2:50 PM	
		Other times by appointment	

Course Description

The purpose of this course is two-fold. Obviously, the primary goal is to help you learn astronomy. As much as possible, we will look at the universe from the point of view of an educated person who looks up into the sky and wonders how things work "up there." You should not be concerned with memorizing a lot of facts. Obviously, an educated person must memorize some things. However, you should be more concerned with obtaining a general understanding of celestial phenomena than knowing precise details about celestial objects. For example, it is important to know the relative motions and positions of the planets. It is not as important to know their exact orbital and equatorial radii.

The secondary goal of this course is to become familiar with the night sky. You will become the person your friends always ask: "What is that bright light over there?"

Students are expected to attend each class meeting. It is very difficult to succeed in this course without regularly attending class.

Broad course goals

1. Use a star chart or planisphere to predict motions and positions of celestial objects.
2. Describe and/or explain, using words and pictures, certain celestial motions and phenomena.
3. Describe how we know certain characteristics (such as distances, compositions, motions) of celestial objects.
4. Display familiarity with a variety of celestial objects such as stars, planets, etc.

Required Resource Materials

The Night Sky Planisphere, a star chart available in the SUB bookstore

A graph-ruled notebook for observations

Final Grades for the course will be calculated as follows:

	A	92 - 100%	A-	90 - 91%	
B+	88 - 89%	B	82 - 87%	B-	80 - 81%
C+	78 - 79%	C	72 - 77%	C-	70 - 71%
D+	68 - 69%	D	62 - 67%	D-	60 - 61%
	F	<60%			

Grading Scheme

Lab assignments/participation	50%
Observation Notebook (due 5/31 or 6/1)	20%
Celestial Zoo presentation (various)	15%
Telescope observations (see below)	<u>15%</u>
	100%

Explanation of assignments

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Lab assignments: There will be a variety lab assignments in this course. It is your responsibility to find out what we do in class each day. Missing class does not excuse you from turning in assignments when they are due.

Generic scoring rubric for lab assignments.

- Assignment is complete and correct, nearly all relevant physical and astronomical principles appropriately applied, nearly all relevant steps described in complete sentences, all necessary and relevant sketches clear and complete (5-6 points)
- Assignment is partially complete, some relevant physical and astronomical principles applied, some relevant steps described, some complete sentences, some sketches (3-4 points)
- Assignment is incomplete and/or unclear, few or no relevant principles applied, single word answers (1-2 points)

Observation Notebook: You are required to go out and observe the night sky at least two nights a week and the position of the sun near noon at least two days a week. (Try to make your observations at approximately the same time each day. There will typically be time during each lab for observations.) For each entry, record the time, date and location of your observation. Note the sky conditions that affect your viewing (i.e., clouds or scattered light). Record your observations in a medium size, graph ruled notebook.

Use a fairly standard method to record the position of one bright star (your choice), one planet (Jupiter or Saturn), and the moon. (Note: if the night is clear and the moon is not out, record this as a null observation.) Record the position of the Sun. The most efficient means to record all of your observations is generally a diagram of the sky, annotated with comments.

The goal of this activity is to help you understand the motions of celestial objects. Before you turn in your notebook, write a brief essay that answers the following questions. Provide evidence based on specific observations from your notebook.

1. How has the Moon's shape and location changed since the start of the quarter?
2. How have the locations of your star changed the start of the quarter?
3. How has the location of your planet (Jupiter or Saturn) changed since the start of the quarter?
4. How has the Sun changed throughout the quarter?
5. Describe the two most important things you learned by doing this notebook.
6. Describe a set of observations that surprised you. Why did they surprise you?

Always bring your observation notebook to lab. We will discuss the notebook during lab. If you work with someone when you do your observations, please put their name in your notebook. Submit your notebook April 26 or 27, depending on your lab day, for a preliminary evaluation.

Celestial zoo presentation: You and a partner will research and give an oral presentation on one member of the “celestial zoo”. The instructor will schedule the zoo presentations throughout the quarter. The purpose of these presentations is to inform the rest of the class about the zoo member you select. The rest of the class should be able to answer the following questions about your celestial zoo member. What is it? What is it made of? How big is it? What other qualities does it have (color, density, motion, appearance, etc.)? How common is it? Where is it usually found? What is its origin? Where can we look to see an example of it? How long have people known about and understood it? How does it evolve?

Some recommended resources for researching your celestial zoo member are: your textbook (do not limit yourself to this source), library books, scientific or astronomical periodicals and the internet (be very wary of anything you find on the internet – check the

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source).

Be creative to make your presentation interesting and informative. Do things such as dressing up as your celestial zoo member; using audio visual aids such as the overhead projector, computer, video disc; using props; making a model; playing a game, etc. You must make an informational handout to distribute to the class. Your celestial zoo topic and due date will be assigned during the first week of the term. Please limit your presentation to 15 minutes. Excessively long set-up time will take away from your 15 minutes. The instructor will stop you after 15 minutes. You may be graded down for information you don't get a chance to share.

Telescope Observing Sheets: On the clear lab nights we will use binoculars and telescopes to observe astronomical objects. You will make a record of approximately four telescope observations. On the back of each observation worksheet you will write a paragraph about the object you observed, including a discussion of its nature, size, distance, actual location and sky location. Two of these are due April 26 or 27. The other two (approx.) are due the last night of lab.

Administrative notes: Any late assignment will be penalized 33% of the possible points for every class day that it is late. If you miss class, it is your responsibility to find out what assignments were made. Unless stated otherwise, assume the audience for your assignments is an educated person who is unfamiliar with the concepts you are trying to explain. It helps to have someone in mind such as another college student who is not taking this course. A good rule of thumb in writing is if you had trouble understanding something, your audience probably would, too.

Honesty: You are individually accountable for the work you submit in this class. Any instance of cheating on an assignment or test will result in a grade of zero for that assignment or test. This policy on cheating includes, but is not limited to, using unauthorized resources on exams, copying another student's exam and copying another student's homework or portfolio assignment.

ADA Statement: Students who have special needs or disabilities that may affect their ability to access information and/or material shared in this course are encouraged to contact ADA Affairs and Students Assistance on campus at 963-2171 for disability related educational accommodations. No one should be excluded from learning in this course.

Observation notebook (25 points)

_____ Observation Number (0-6)

_____ Observations

Clear, exceptional detail in diagrams and descriptions of objects and positions (6-8)

Clear, sufficient detail for the reader to get a good idea of celestial positions (4-5)

Unclear diagrams, not enough detail to determine celestial positions (1-3)

_____ Summary

Clearly addresses the Qs, appropriate and complete summary of motions, related to observations (7-8 points)

Clear summary, lacking tie-in with observations (4-6)

Unclear summary or incomplete and incorrect info (1-3)

_____ Preliminary evaluation in April based on the above criteria (3)

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Celestial zoo (20 points)

_____ Accuracy and completeness of presentation

Presentation is factually correct and complete, it answers all of the relevant questions (7-8)

Nearly all facts presented are correct, some key facts are missing, presentation answers some of the relevant questions listed above (5-6)

Facts are misleading, presentation only answers a few of the relevant questions (1-4)

_____ Style of presentation

Complete and creative use of presentation aids for audience benefit (5-6)

Used some resources to aid presentation (3-4)

Just read notes (1-2)

_____ Evidence that each partner contributed significantly (2)

_____ Accuracy and completeness of handout

Handout is factually correct and complete, it answers all of the relevant questions listed in the syllabus, handout is free from distracting errors, includes two sample test questions with correct answers (3-4)

Most facts presented are correct, some key facts are missing, report answers some of the relevant questions listed above, handout is free from most distracting writing errors. (1-2)

Telescope Observing Sheets (5 points)

_____ Accuracy and completeness sketch (1-2)

_____ Description of object

Complete description of the object (3)

Somewhat complete description of the object (1-2)