

COURSE PROPOSAL FOR REVISED GENERAL EDUCATION COURSE

PHY 1056G -- Principles of Astronomy Laboratory

1. Catalog Description

- a. Course level: PHY 1056G
- b. Title: Principles of Astronomy Laboratory
- c. Credit: 0-2-1
- d. Term to be offered: F
- e. Short title: Astronomy Lab
- f. Course description: Experimental work demonstrating astronomical principles and techniques and their applications. Physics 1055G must be taken concurrently.
- g. Prerequisite: None
- h. The course is writing-active.

2. Student Learning Objectives

In successfully completing this course, students will:

- collect data by making the appropriate astronomical observations and subsequently analyze the data to determine the relationship between the various physical variables. (critical thinking)
- determine the uncertainty in the data and make conclusions based upon these results. (critical thinking)
- develop formal lab reports each week. (writing, critical thinking)
- become scientifically literate and thus able to participate in governmental issues related to the environment and the space program. (critical thinking, citizenship)
- be able to apply problem-solving techniques in the areas of Astronomy and Physics. (critical thinking)

3. Course Outline

<u>Week</u>	<u>Content</u>
1	Introduction
2	The Unitron telescope
3	Reaction time
4	Orbit of Mercury
5	Kepler's Law and the mass of planets
6	Crater formation
7	Volcanoes on Io
8	Radioactivity and the age of the solar system
9	Sunspot activities
10	Rotation of the Sun
11	Emission Spectroscopy

12	Hertzsprung - Russell Diagram
13	Spectral Classification of Stars
14	Hubble's Constant and the age of the Universe
15	Quasars and Fundamental Constants

4. Evaluation of Student Learning

- a. Achievement of student learning will be based on the following:

Quizzes (word problems)	20%
Lab reports	80%

Each of the above involves identifying the relevant information in the statement of the problem, selecting the appropriate strategy for analyzing the information, and using appropriate mathematical tools and techniques to solve the problem.

- b. This course is a writing-active course. At least 10 of the labs that will be turned in require a lab report format of at least two pages.

5. Rationale

a. Segment

This course will be placed in the physical science component of the scientific awareness segment of the general education program. The course meets the requirements of that segment since students in this course must:

- (1) synthesize solutions by applying the appropriate set of physical and mathematical concepts to astronomy labs and quiz problems.
- (2) gather, identify and use the appropriate observational data to quantifiably explain astronomical phenomenon in the observed universe.

b. Level and prerequisites

This course is the first course in astronomy and is therefore, appropriately, a freshman level course. The only corequisite is enrollment in the astronomy lecture, PHY 1055G.

c. Similarity to existing courses and effect upon programs of any department

- (1) **Justify course if it is similar to an existing course.**
This is a revision of an existing course, PHY1056C, and should maintain the same curriculum ID as PHY 1056C.
- (2) **Courses to be deleted if the new course is approved**
No courses will be deleted or added. This is a revision of an existing course.
- (3) **Describe any relevant program modification if the course is approved**
No modifications of any programs are expected.

d. Specify programs, majors, or minors in which the course is to be required or used as an appropriate elective

This course is not required for any major or minor.

6. Implementation

- a. List faculty member(s) to whom the course will be assigned initially.**
Dr. Conwell, Dr. Andrew, Dr Pakey
- b. Textbook(s) and supplementary materials to be used, including publication dates.**
Universe by Kaufman (5th edition, 2000)
- c. Specify any additional costs to students**
There is an existing \$5.00 lab fee, and the purchase of a lab manual will continue to be required of students..
- d. List the term in which the course will first be offered.**
Fall 2001.

7. Community College Transfer

A community college course may be judged equivalent to this course.

8. Date approved by the department: March 31, 2000

9. Date approved by the college curriculum committee: April 18, 2000

10. Date approved by CAA: October 19, 2000

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PHY 1096G -- Principles of Astronomy, Honors

1. Catalog Description

- a. Course level: PHY 1096G
- b. Title: Principles of Astronomy Laboratory, Honors
- c. Credit: 0-2-1
- d. Term to be offered: S
- e. Short title: Astronomy Lab
- f. Course description: Experimental work demonstrating astronomical principles and techniques and their applications. Physics 1095G must be taken concurrently.
- g. Prerequisite: Admission to the University Honors Program
- h. The course is writing-active.