

COURSE PROPOSAL FOR NEW GENERAL EDUCATION COURSE PHY 1152G -- Principles of Physics I Laboratory

1. Catalog Description

- a. Course level: PHY 1152G
- b. Title: Principles of Physics I Laboratory
- c. Credit: 0-2-1
- d. Term to be offered: F, S, Su
- e. Short title: Prin Phys I Lab
- f. Course description: Experimental work demonstrating physics principles and their applications. Must be taken concurrently with Physics 1151G. Credit not given for both PHY 1152G and PHY 1352G.
- g. Prerequisite: MAT 1271 or a satisfactory ACT mathematics score.
- h. The course is writing-active.

2. Student Learning Objectives

- a. In successfully completing this course, students will:
 - collect data by making the appropriate measurements and subsequently analyze the data to determine the relationship between the various physical variables. (critical thinking)
 - perform an error analysis of the data to determine the uncertainty in the results and make conclusions based upon these results. (critical thinking)
 - develop formal lab reports each week. (writing, critical thinking)
- b. Students will also:
 - learn, understand and use scientific terminology.
 - be able to apply problem-solving techniques in the areas of geology, industrial technology, and life science, and the medical professions.
 - prepare for the MCAT exam (in the case of pre-medical students).

3. Course Outline

| <u>Week</u> | <u>Content</u> |
|-------------|--|
| 1 | Introduction to the Microcomputer-Based Laboratory |
| 2 | Introduction to Graphical Analysis |
| 3 | Introduction to Motion |
| 4 | Uniformly Accelerated Motion, Freely Falling Body |
| 5 | Newton's Second Law of Motion |
| 6 | Newton's Second Law, Circular Motion |
| 7 | Conservation Laws |

| | |
|----|--|
| 8 | Lab Quiz I |
| 9 | Conditions for Static Equilibrium |
| 10 | Rotational Dynamics |
| 11 | Simple Harmonic Motion and Energy Conservation |
| 12 | Archimedes Principle |
| 13 | Mechanical Equivalent of Heat |
| 14 | Velocity of Sound |
| 15 | Lab Quiz II |

4. Evaluation of Student Learning

- a. Achievement of student learning will be evaluated based on the following:
- | | |
|-------------|-----|
| Lab reports | 80% |
| Lab quizzes | 20% |
- b. This course is a writing-active course. The 14 lab reports are all at least four pages long. Quizzes will be in the form of short essays.

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) collect and analyze data to determine the relationship between variables.
 - (2) use error analysis techniques to determine the uncertainty in the results.
- b. **Level and prerequisites**
 This course is the first lab course in the sequence of physics courses and is therefore, appropriately, a freshman level course. Prerequisite: MAT 1400 and MAT 1330, or 1340, or a satisfactory ACT mathematics score.
- 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 Physics 1152 and maintains the same curriculum ID as 1152. This course is similar to PHY 1352G, but requires a lower level of math expertise -- algebra instead of calculus.
 - (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 required in Biological Sciences, Geology, Industrial Technology, Pre-Dentistry, Pre-Medicine, Pre-Veterinary Medicine.

6. Implementation

- a. List faculty member(s) to whom the course will be assigned initially.**
Any Physics faculty member may be assigned to teach this course.
- b. Textbook(s) and supplementary materials to be used, including publication dates.**
Principles of Physics I Laboratory Manual, EIU Physics Dept., 1999
- c. Specify any additional costs to students**
Students will continue to be required to purchase the lab manual.
- d. List the term in which the course will first be offered**
Spring 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

Departmental contact person: Keith Andrew

Campus phone: 581-3220