

COURSE PROPOSAL FOR REVISED GENERAL EDUCATION COURSE

PHY 3050G -- Excursions in Physics

1. Catalog Description

- a. Course level: PHY 3050G
- b. Title: Excursions in Physics
- c. Credit: 3-0-3
- d. Term to be offered: F, S, Su
- e. Short title: Excursions Phys
- f. Course description: Selected topics in Physics will be explored to illustrate a variety of physical situations and to acquaint the student with some of the underlying fundamental ideas and processes and methods of Physics.
- g. Prerequisites: none
- h. The course is writing-active.

2. Student Learning Objectives

- a. In successfully completing this course, students will:
 - use scientific terminology appropriately, which will make them a more informed electorate. (citizenship)
 - understand the physical principles underlying modern technology. (critical thinking, citizenship)
 - successfully answer essay-type exam questions. (writing, critical thinking)
 - analyze and solve numerical problems related to course material. (critical thinking)
 - understand and use scientific methods and technology. (critical thinking, citizenship)
- b. Students will also:
 - understand and communicate some of the concepts of classical and modern physics.
 - communicate a scientific understanding of many aspects of the physical universe, mainly relating to motion, energy, waves, sound, and light.
 - apply problem-solving techniques and solve numerical problems in physics and in other areas of science.

3. Course Outline

| <u>Week</u> | <u>Topic</u> |
|-------------|---|
| | <i>Mechanics</i> |
| 1 | Introduction; Linear Motion; Kinematics |
| 2 | Non-linear Motion |
| 3 | Newton's Laws of Motion; Dynamics |
| 4 | Conservation Laws |
| 5 | Conservation Laws |
| | Hour Exam #1 |

Simple Harmonic Motion and Waves

- 6 Simple Harmonic Oscillators
- 7 Wave Phenomena
- 8 More on Waves; Beats, Resonance, Interference
- 9 Sound and Music

Hour Exam #2

Optics

- 10 Reflection and Refraction of Light
- 11 Color and Vision
- 12 Image Formation
- 13 Optical Instruments
- 14 Wave Optics: Interference and Diffraction

Hour Exam #3

4. Evaluation of Student Learning

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

| | |
|----------------------|-----|
| quizzes and homework | 40% |
| hour exams | 40% |
| final exam | 20% |
- b. This course satisfies the criteria for a writing-active course through short essays which are part of quizzes, exams, and homework assignments.

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) analyze homework and exam problems and synthesize solutions by applying the appropriate set of physical and mathematical concepts. (critical thinking)
- (2) identify and use the appropriate physical and mathematical laws to quantifiably explain phenomena that occur in the natural world. (critical thinking)

b. Justify the level and list prerequisites

While this course has no prerequisite, the junior standing means that the student taking this is more sophisticated in his outlook and experience than the normal incoming college freshman. The level of discussion in the course material reflects this.

c. Indicate 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 3050C and maintains the same curriculum ID as 3050C. Both this course and Physics 1052G begin with an introduction to

Newtonian physics, which is necessary background for all other areas of physics.
After this introductory material, the course topics are different.

(2) **Courses 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. Davis , but any Physics faculty member may be assigned to teach this course.

b. **Textbook(s) and supplementary materials to be used, including publication dates.**

Inquiry into Physics, Ostdiek and Bord, 4th ed, 1999, Brooks/Cole (Thompson Learning)

c. **Specify any additional costs to students.**

There will be no additional costs to students.

d. **List the term in which the course will first be offered.**

Spring 2001

7. Community College Transfer

Not applicable

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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