COURSE PROPOSAL FOR REVISED GENERAL EDUCATION COURSE
PHY 1051G -- Physics of the Modern World

1. Catalog Description

a. Course level: PHY 1051G
b. Title: Physics of the Modern World
c. Credit: 3-0-3
d. Term to be offered: S
e. Short title: Phys Mod World
f. Course description: An introduction to some of the revolutionary ideas of modern physics, such as quantum theory, atomic and nuclear physics, and Einstein's theory of Relativity. Cosmology, technology, plectics (the study of simplicity and complexity). Other topics may also be discussed at the discretion of the instructor.
g. Prerequisites: None
h. The course is writing-active.

2. Student Learning Objectives

a. In successfully completing this course, students will:
   • use scientific terminology, which will make them a more informed electorate. (citizenship)
   • come to understand the physical principles underlying modern technology. (critical thinking, citizenship)
   • research and write essays on topics related to course material. (writing, critical thinking)
   • successfully answer essay-type exam questions. (writing, critical thinking)
   • analyze and solve numerical problems related to course material. (critical thinking)
   • discuss some of the cutting edge issues today in physical science, such as the creation and shape of the universe, the fundamental ideas of space and time, what is the fundamental constituents of matter, how do theories of science arise and how are they tested. (critical thinking)

b. Students will also:
   • understand and be able to communicate the concepts of quantum mechanics and of the special and general theories of relativity.
   • be able to apply problem-solving techniques and solve numerical problems in physics and in other areas of science.

3. Course Outline

<table>
<thead>
<tr>
<th>Week</th>
<th>Content</th>
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<tbody>
<tr>
<td>1</td>
<td>Course overview and review of necessary mathematics</td>
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<tr>
<td>2-3</td>
<td>Overview of classical mechanics: Newton's laws, momentum, and energy</td>
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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. Level and prerequisites
   This course could be taken as a first physics course, and requires mathematics only at the level of simple algebra, and is therefore, appropriately, a freshman level course. There are no prerequisites.

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 1051C and maintains the same curriculum ID as 1051C.
   (2) Courses to be deleted if the new course is approved or the exceptional need to be met or the obvious gap to be filled.
       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.
      Any Physics faculty member may be assigned to teach this course.

   b. Identify the textbook(s) and supplementary materials to be used, including publication dates.
      "In Search of Schrödinger's Cat", by John Gribbin (1984)

   c. 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
   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: __________________________

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