COURSE PROPOSAL FOR NEW GENERAL EDUCATION COURSE
PHY 1351G -- General Physics I

1. **Catalog Description**
    a. Course level: PHY 1351G
    b. Title: General Physics I
    c. Credit: 3-0-3
    d. Terms to be offered: F, S
    e. Short title: Gen Physics I
    f. Course description: Classical mechanics including a detailed study of statics, kinematics, dynamics, simple harmonic motion; with straight-line, projectile, and rotational motion; also conservation principles, work, energy, momentum. The first of a three-semester sequence designed for students in chemistry, pre-engineering, mathematics, physics, etc. Physics 1352G must be taken concurrently. Credit not given for both 1351G and 1151G.
    g. Co-requisite: MAT 1440G or MAT 1441G
    h. This course is writing active.

2. **Student Learning Objectives**
    a. In successfully completing this course, students will:
    - understand the basic principles of mechanics. (critical thinking)
    - apply geometry, algebra, and basic calculus to describe these principles. (critical thinking)
    - identify and use the appropriate physical and mathematical laws to quantifiably explain phenomena that occur in the natural world and in various disciplines. (critical thinking)
    - understand the underlying principles of energy, work, and conservation laws. (critical thinking)
    - analyze and answer mechanics problems; in a typical semester over 150 homework problems (all of which are word problems), will be completed, corrected and returned to the student. (critical thinking)
    - become scientifically literate about the basic laws and vocabulary that govern the description of the physical universe and thus able to participate in governmental issues related to energy, nuclear disarmament, the space program and the environment.(critical thinking, citizenship)
    - be able to apply problem-solving techniques in the areas of Physics, Chemistry, Engineering, Mathematics and most physical and biological sciences. (critical thinking)

3. **Course Outline**

Week	Content
1	Measurement and Motion in One Dimension
2	Properties of Vectors
3	Motion in Two Dimensions
4-5	Forces and Newton's Laws of Motion

6	Circular Motion, Applications of Newton's Second Law
7	Work and Energy
8	Potential Energy and Conservation of Energy
9	Linear Momentum and Collisions
10	Rotation of a Rigid Object about a Fixed Axis
11	Rolling Motion, Angular Momentum, and Torque
12	Static Equilibrium and Elasticity
13	Oscillatory Motion
14	The Law of Gravity
15	Fluid Mechanics

4. Evaluation of Student Learning

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

Solutions to homework (word problems)	20%
Three hour exams	60%
Final Exam	20%

Each of the above involve 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; all homework problems (typically 150 word problems) are answered in a method that requires all work and assumptions about the problems to be presented in a clear and reasoned form. This is also the format of the tests.

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 analyze mechanics problems, synthesize solutions by applying the appropriate set of physical and mathematical concepts; and use the appropriate physical and mathematical laws to quantifiably explain phenomena that occur in the natural world and in various disciplines.

    b.   **Level and prerequisites**

This course is the first in a sequence of physics courses and is therefore, appropriately, a freshman level course. It has a mathematics co-requisite of MAT 1440G or MAT 1441G (calculus), which is also taken in the first semester of the freshman year by most students who are, interested this course.

    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 PHY 1351 and will replace PHY 1351 as PHY 1351G; it should maintain the same curriculum ID as PHY 1351. This course is similar to PHY 1151G, but requires a higher level of math expertise due to its use of calculus.

        (2)   **Courses to be deleted**

No courses will be deleted or added. This is a revision of an existing course.

    (3)   Program modification if the course is approved
No modifications of any programs are expected.

  d.   Programs, majors, or minors in which the course is to be required or used as an appropriate elective
This course is required for majors in Physics, Chemistry, and Engineering; and minors in Physics with teacher certification, and Chemistry with teacher certification.

6.   Implementation

  a.   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 material to be used, including publications dates
Physics for Scientists & Engineers, by Serway (4th edition, 1996)

  c.   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
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

PHY1391G -- General Physics I, Honors

1. Catalog Description

    a. Course level: PHY 1391G

    b. Title: General Physics I Honors

    c. Credit: (3-0-3)

    d. Terms to be offered: F

    e. Short title: Gen Phy I Honors

    f. Course description: A quantitative study of kinematics, statics, dynamics, and simple harmonic motion. Equations of motion are based upon an application of Newton's Laws, conservation principles, the work-energy theorem and Newton's Law of Universal Gravitation. Corequisite: MAT 1440G or MAT 1441G. Physics 1392G must be taken concurrently. Credit not given for both 1391G and 1351G or 1151G.

    g. Prerequisites: Admission to the University Honors Program

    h. This course is writin g active.