JEFFERSON COLLEGE
COURSE SYLLABUS

PHY118
INTRODUCTION TO PHYSICS
2 Credit Hours

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by
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Arts & Science Education
Dr. Mindy Selsor, Dean
PHY118 Introduction to Physics

I. CATALOG DESCRIPTION

A. Prerequisite: MTH133 and MTH134

B. 2 semester hours credit

C. Introduction to Physics is the beginning course in the physics sequence for all physics, chemistry, mathematics, and pre-engineering majors. It is a study of the development, philosophy and methods of physics. This course is required for the Associate of Science degree. Introduction to Physics also partially satisfies the science requirement for the Associate of Arts degree. (S)

II. EXPECTED LEARNING OUTCOMES/ASSESSMENT MEASURES

| Students will understand the development | Classroom discussions, homework, exams. |
| of our modern concepts of physics | |
| Students will understand the changing | Classroom discussions, homework, exams. |
| philosophy of physics. | |
| Students will learn to give a critical reading | Classroom discussions, homework, exams. |
| of articles from various scientific journals. | |
| Students will develop an understanding of | Classroom discussions, homework, exams. |
| the utility of vectors and how to manipulate | |
| them. | |

III. COURSE OUTLINE WITH UNIT OBJECTIVES

A. The invention of science
   1. Students will learn pre-scientific explanations of nature.
   2. Students will state reasons why Greeks could invent science.
   3. Students will organize the reasons for two different physics—celestial and sublunar

B. Celestial physics up to Newton
   1. Students will apply ideas of celestial motion before Aristotle.
   2. Students will diagram Aristotle's model of the universe.
   3. Students will illustrate Ptolemy's epicycles and defferents.
   4. Students will reproduce Copernicus' heliocentric theory.
   5. Students will appraise Kepler and the ellipse.
   6. Students will assess Galileo and his use of the telescope.

C. Sublunar physics up to Newton
   1. Students will memorize Aristotle's four elements.
   2. Students will contrast Aristotle's natural and violent motion.
3. Students will discuss objections to Aristotle's ideas up to Galileo.
4. Students will investigate Galileo's ideas concerning sublunar motion

D. Newtonian Physics
1. Students will memorize Newton's Laws.
2. Students will examine Newton's idea of gravity.
3. Students will apply Newton's combining of celestial and sublunar physics.

E. Vectors
1. Students will describe the vector concept.
2. Students will determine vector components.
3. Students will construct addition of vectors
4. Students will define the unit vector.
5. Students will compare the Dot Product to the Cross Product.

IV. METHODS OF INSTRUCTION

A. Lecture
B. Classroom Discussion
C. Homework

V. REQUIRED TEXTBOOK

Cohen, I Bernard; *The Birth of a New Physics, Revised and Updated*, (most recent edition), Norton Publishing.

VI. REQUIRED MATERIALS

None

VII. SUPPLEMENTAL REFERENCES

None

VIII. METHOD OF EVALUATION

A. Graded Homework
B. Examinations
IX. ADA STATEMENT

Any statement requiring special accommodations should inform the instructor and the Coordinator of Disability Support Services (Library; phone 636-797-3000, ext. 169).

X. ACADEMIC HONESTY STATEMENT

All students are responsible for complying with campus policies as stated in the Student Handbook (see College Website).