Common Course Outline
PHYS 102
Fundamentals of Physics II
4.00 Semester Hours

The Community College of Baltimore County

Description

Fundamentals of Physics II continues with the basic principles of physics for students who are not expecting to major in engineering or the physical sciences. Topics include electricity and magnetism, optics and selected topics from modern physics.

4 credits: 3 lecture hours and 3 laboratory hours per week. Prerequisites: PHYS 101. This lab course may be used to fulfill 4 credits of the General Education requirement in Biological and Physical Sciences.

Overall Course Objectives

Upon completion of this course the student will be able to:

1. Apply Coulomb's Law of electrostatic force.(I,III), (1,2,3)
2. Solve problems of force and motion in electric fields.(I,III,IV,VI) (1,2,3)
3. Apply energy concepts to electrostatic potential.(I,III) (1,2,3)
4. Analyze elementary DC circuits with Ohm's and Kirchoff's Laws.(I,III) (2,3,4,6)
5. Apply the Lorentz magnetic force laws.(I,III) (1,2,3)
6. Solve problems of magnetic induction, Faraday's Law, and Lenz's Law.(I,III,IV,VI) (1,2,3)
7. Analyze elementary RLC AC series circuits.(I,III) (2,3,4,6)
8. Solve problems of reflection and refraction of light.(I,III,IV,VI) (1,2,3)
9. Analyze the optics of lenses and spherical mirrors.(I,III) (2,3,4)
10. Analyze lens systems with the lens equation and the Lens Makers equation.(I,III) (2,3,4)
11. Solve problems involving the application of the concepts presented to practical situations in our and other societies.(III,IV,V) (1,5,7)
12. Write coherent and presentable laboratory reports.(II,III,V,VI) (2,4,5,6,7)

Major Topics

Electric Charge & Electric Field

Electric Potential And Electric Energy; Capacitance

Electric Current

DC Circuits

Magnetism

Electromagnetic Induction & Alternating Current

Electromagnetic Waves

Light: Geometric Optics

Wave Optics

Optical Instruments

Topics in Modern Physics Selected From

- Special Theory of Relativity
- Atomic Physics
- Quantum Mechanics
- Nuclear Physics
- Molecules and Solids
- Elementary Particles
- Astrophyics
- Cosmology

Course Requirements

Grading/exams: Grading procedures will be determined by the individual faculty member but will include the following: a minimum of three examinations, quizzes, a final examination and laboratory reports. Written laboratory reports will be required on a more or less weekly basis.

Other Course Information

This course is a General Education core course and a Biological and Physical Sciences elective.
This course is the second course in a two-course sequence.

Individual faculty members may include additional course objectives, major topics, and other course requirements to the minimum expectations stated in the Common Course Outline.

(8) Date Revised: October 28, 2003