C-ID Descriptor
Algebra/Trigonometry-Based Physics B

Descriptor Details

- **Descriptor Title**: Algebra/Trigonometry-Based Physics B
- **C-ID Number**: 110
- **Units**: 4.0
- **Hours**: 0000
- **Date of Last Revision**: 10/12/2017 04:43:58 PM PDT

General Description

This course is intended for students not majoring in physics or engineering but needing a one-year course in physics as a requirement for their major program. The course is part of a two-semester sequence whose contents may be offered in other sequences or combinations. Core topics include: electrostatics, magnetism, DC circuits, optics and modern physics.

Prerequisites

Completion of PHYS 105

Corequisites

No information provided

Advisories

No information provided

Content

- Electrostatics
- Fields

- Potentials
- DC Circuits
- Capacitors
- Resistivity
- Magnetism
- Faraday's and Lenz's Laws
- Ampere's Law
- Geometric Optics
- Lenses, Mirrors and Optical Instruments
- Wave Optics/Physical Optics
- Selected Topics from Modern Physics (**Not all of these topics are required but covering all of them is recommended**)
    - Special Relativity
    - Quantum Mechanics
    - Atomic Physics
    - Nuclear Physics
- "Floating Topics" which may be included in this semester
    - Mechanical Waves and Sound

Lab Activities

Laboratory activities should cover the range of topics designated for lecture. The majority of labs should be hands-on activities with "real world" data collection as opposed to computer simulation. Simulations may be appropriate for some topics in modern physics.

Objectives

Course Objectives: *At the conclusion of this course, the student should be able to:*

1. Analyze simple static charge distributions and calculate the resulting electric field and electric potential.
2. Analyze simple current distributions and calculate the resulting magnetic field.
3. Predict the trajectory of charged particles in uniform electric and magnetic fields.

4. 4. Analyze DC circuits in terms of current, potential difference, and power dissipation for each element.
5. Analyze basic situations involving reflection and refraction, and use this analysis to predict the path of a light ray.
6. Analyze situations involving interference and diffraction of light waves, and apply these to situations including double slits, diffraction gratings, and wide slits.
7. Understand the limitations of classical physics and begin to develop an awareness of the importance of modern physics (i.e. quantum theory and special relativity) in the natural world.

Laboratory Course Objectives: *At the conclusion of the laboratory component of this course, the student should be able to:*

1. Analyze real-world experimental data, including appropriate use of units and significant figures.
2. Relate the results of experimental data to the physical concepts discussed in the lecture portion of the class.

Evaluation Methods

Examinations which include problem solving, exercises, final examinations, projects, homework problems, laboratory reports.

*Note that not all of the methods listed are required.

Textbooks

Typical Textbooks:

Walker, James; *Physics*

Cutnell, John D.; Johnson, Kenneth W.; *Physics*

Serway, Raymond A.; Faughn, Jerry S. *College Physics*

Typical Lab Manuals:

Wilson, Jerry D.; Hernandez, Cecilia A.; Physics Laboratory Experiments

Gastineu, John; Physics with Computers

Sokoloff, David R.; Thornton, Ron; Laws, Priscilla; RealTime Physics: Active Learning Laboratories Modules 1 – 4

Laboratory manuals developed on site.