Course Number and Title

A. Course Number and Title: PS 216 – College Physics II
B. Prerequisite: PS 215 College Physics I
C. Credit Hours: 5 (Lecture), 0 (Lab)

II. Department: Math and Science

III. Course Description

Continues College Physics I, includes the study of electricity, magnetism, electromagnetic induction, electromagnetic waves, optics, atomic and nuclear physics. A second semester course for students who require calculus-based physics such as engineering, chemistry, physics and premed majors. Includes three hours of lecture, one hour of recitation and two hours of lab per week.

IV. Course Competencies
1. The student will become familiar with the concepts, definitions, units and general nature of electric, magnetic and atomic phenomena.
2. The student will understand the scientific models and laws which govern the physical interactions of the various phenomena listed in competency 1.
3. The student will improve their problem solving abilities which use the models and laws listed in competency 2 to apply to physical situations that are part of the phenomena listed in competency 1.
4. The student will further improve their measurement and laboratory techniques.
5. The student will learn how to run computer simulations from the physics resources available on the internet.

V. Assessment Items

The primary method of evaluation will be through examinations. In addition, there will be a minimum of 2 formal lab writeups. A written report of the results of a simulation run on a physics website chosen by the instructor (e.g. www.myphysicslab.com).

VI. Course Content

I. Electricity
   A. Electric Forces and Fields
      1. Electric Charge
      2. The Electric Force
      3. The Electric Field

   B. Electric Potential
      1. Electric Potential Energy
      2. Electric Potential
      3. Equipotentials
      4. Capacitors
      5. Dielectrics
      6. Capacitors in Series and Parallel

   C. DC Circuits
      1. Electric Current
      2. Simple Electric Circuits
II. Magnetism and Electromagnetic Waves
  A. Magnetism
  1. Magnetic Fields
  2. Earth’s Magnetic Field
  3. Magnetic Forces on Charges and Wires
  B. Electromagnetic Induction
  1. Magnetic Flux
  2. Induced EMF
  3. Faraday’s Law and Lenz’s Law
  4. AC Generators
  5. Electric Motors
  6. Transformers
  C. Electromagnetic Waves
  1. Oscillating Electric and Magnetic Fields
  2. Types of Electromagnetic Waves
  3. The Speed of Electromagnetic Waves

III. Geometric Optics, Nuclear Physics, Atomic Physics
  A. Geometric Optics
  1. Reflection
  2. Images with Plane and Curved Mirrors
  3. Refraction
  4. Images with Spherical Lenses
  B. Wave Optics
  1. Interference
  2. Diffraction
  3. Polarization
  C. Optical Devices
  1. The Magnifying Glass
  2. The Compound Microscope
  3. The Eye
  D. Nuclear and Atomic Physics
  1. The Semiclassical Atom
  2. Isotopes
  3. Radioactivity
  4. General Conditions for a Stable Nucleus
  5. Types of Radioactive Decay
  6. Exponential Decay

VII. Instructional Materials


Guidelines for Requesting Accommodation Based on Documented Disability or Medical Condition
It is the intention of Highland Community College to work toward full compliance with the Americans with Disabilities Act, to make instructional programs accessible to all people, and to provide reasonable accommodations according to the law.

Students should understand that it is their responsibility to self-identify their need(s) for accommodation and that they must provide current, comprehensive diagnosis of a specific disability or medical condition from a qualified professional in order to receive services. Documentation must include specific recommendations for accommodation(s). Documentation should be provided in a timely manner prior to or early in the semester so that the requested accommodation can be considered and, if warranted, arranged.

**On-Campus Students:** At enrollment all on campus students will complete a form which will allow them to self-identify any disability. Questions should be directed to the Disabilities Coordinator.

**Off-Campus Regional Students:** Self-identify your disability and accommodation needs with the Regional Coordinator and/or instructor preferably prior to the first night of class or early in the semester.