

Department:

Physics

Course Description:

This course provides a qualitative introduction to the science of physics. The course will cover principles from classical, relativity, and quantum theories, including motion, forces, energy, thermodynamics, waves, electromagnetism, atomic physics, and special and general relativity. The course is intended as a broad-based introduction to physics for students who are not majoring in science.

Course Competencies:

Upon completion of the course, the student should be able to:

1. State the definitions and describe the units and general nature of important physical quantities that describe natural phenomena.
2. Apply Newton's Laws of Motion, the Law of Conservation of Energy, the Laws of Conservation of Linear and Angular Momentum, and the Laws of Thermodynamics to solve conceptual problems.
3. Describe and explain linear, rotational, projectile, and satellite motion.
4. Describe the processes of heat transfer and the effect of temperature on atomic and molecular motion and changes of phase.
5. Describe the relationships between electricity and magnetism and electromagnetic waves.
6. Describe the types of nuclear radiation and explain how it affects individual lives.
7. Explain how special and general relativity are incorporated into our modern perspective of physics.
8. Describe the basic situations where quantum and relativity theories must be applied.
9. Obtain, analyze, and interpret results from experiments.
10. Analyze data and provide written reports on the results of experiments.

Course Content:

- A. Scientific Method and Measurements
- B. Linear Motion
- C. Newton's Laws
- D. Linear Momentum
- E. Work and Energy
- F. Two Dimensional Motion
- G. Properties of Matter
- H. Heat and Thermodynamics
- I. Vibrations, Oscillations and Waves
- J. Electricity and Magnetism
- K. Electromagnetic Radiation
- L. Atomic and Nuclear Physics
- M. Relativity Theory

Learning Assessments:

Course competencies will be assessed by use of exams, quizzes, and lab reports.

Instructional Materials:

Textbook: Hewitt, P. (2010). *Conceptual Physics* (11th ed.). Boston, MA: Pearson/Addison Wesley. ISBN-13: 978-0321568090

Guidelines for Requesting Accommodations 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.

In order to begin the process all students **must** complete the “Disabilities Self-Identification Form” on our [Disability Services website](#).

This form can also be accessed at the Highland Community College homepage under Students Services/Student Resources/Disability Service or by contacting the Disabilities Coordinator.

A Note on Harassment, Discrimination and Sexual Misconduct

Highland Community College seeks to assure all community members learn and work in a welcoming and inclusive environment. Title VII, Title IX, and College policy prohibit harassment, discrimination and sexual misconduct. Highland Community College encourages anyone experiencing harassment, discrimination or sexual misconduct to talk to report to the Vice President for Student Services, the Human Resources Director or complete an [online report](#) about what happened so that they can get the support they need and Highland Community College can respond appropriately.

There are both confidential and non-confidential resources and reporting options available to you. Highland Community College is legally obligated to respond to reports of sexual misconduct, and therefore we cannot guarantee the confidentiality of a report, unless made to a confidential resource. Responses may vary from support services to formal investigations. As a faculty member, I am required to report incidents of sexual misconduct and thus cannot guarantee confidentiality. I must provide our Title IX coordinator with relevant details such as the names of those involved in the incident. For more information about policies and resources or reporting options, please review our [Equity Grievance Policy](#).