PHYS 1000

Division: Natural Science and Mathematics
Department: Physics
Course: PHYS 1000
Title: Conceptual Physics
Catalog Description:

PHYS 1000 is a survey of the basic concepts of classical and modern physics as they apply to phenomena observed in everyday life. Topics include mechanics, gravitation, thermodynamics, waves, sound, light, and electricity and magnetism. Emphasis is on the concepts, with a minimum of mathematics.

General Education Requirements: Physical Science
Semesters Offered: TBA
Credit/Time Requirement: Credit: 2; Lecture: 2; Lab: 0
Clock/Hour Requirements: 0
Offered for Non-Credit: No
Justification:

This course is offered to serve as a general education class in the physical science area. It is intended for those not majoring in a physical science, as an introduction to physics and physical concepts in a way that will help them interpret the phenomena they observe in the world around them. This course can be a building block in increasing scientific literacy for non-science majors.

Student Learning Outcomes:

Students will know important scientific laws and principles, such as those that govern matter and energy, and space and time. Students will also understand that science is a process to gain knowledge. Students will understand the workings of the physical world, and better understand the interdependence of man, nature, and evolving technologies.
Students will be able to solve simple paper-and-pencil physics problems and apply them to real life. They will also be able to carry on intelligent conversations about physics.

Students will feel that the physical world is interesting, beautiful, and that science is a valuable way to understand it. Students will be more inclined to take an interest in science articles and shows in the media.

Content:

PHYS 1000 gives a conceptual overview of the following topics: the nature of science and the scientific method, measurement, kinematics, dynamics, Newton's laws, gravitation, momentum, work, energy, rotation, thermodynamics, the atomic nature of matter, pressure and buoyancy in fluids, waves, sound, light, and atomic and nuclear physics.

General Education Outcomes:

7) Apply scientific reasoning to a variety of contexts.
The tests are almost completely dedicated to conceptual questions where students must apply scientific reasoning. The homework also requires scientific reasoning to solve the problems. Students are also required to do home projects or home experiments to apply scientific reasoning to things they find in their residences.

Key Performance Indicators:

Homework problems: 15%-30% of the final grade
Quizzes: 10%-20% of the final grade

Tests: 20%-35% of the final grade

Participation: 5%-15% of the final grade

Final exam: 15%-35% of the final grade

Representative Text and/or Supplies:
Conceptual Physics by Paul G. Hewitt, current edition.

Optimum Class Size: 20
Maximum Class Size: 24

Signatures:

I hereby submit this course syllabus:

Ted Olson, , Professor

I hereby find this course consistent with the goals and resources of the Physics Department:

Ted Olson, , Professor, Chair

I hereby find this course consistent with the goals and resources of the Natural Science and Mathematics Division:

Dan Black, EdD, Associate Professor, Dean

I have discussed the need for library resources related to this class with the person submitting the syllabus:

Lynn Anderson, MLIS, Technical Services Librarian (Main Campus)

Michelle Olsen, MLS, Campus Librarian (Richfield Campus)