PHSC 1000

Division: Natural Science and Mathematics
Department: Physics
Course: PHSC 1000
Title: Interdisciplinary Physical Science
Catalog Description:

This course is designed to give non-majors a glimpse at physics, chemistry, geology, meteorology, and astronomy, and how they relate to the world around them. It does this by using a conceptual approach to and demonstrations of the most significant and universal laws and models describing the physical world. The course also shows how the different disciplines in the physical sciences overlap and contribute to each other.

General Education Requirements: Physical Science
Semesters Offered: Fall, Spring
Credit/Time Requirement: Credit: 3; Lecture: 3; Lab: 0
Clock/Hour Requirements: 0
Offered for Non-Credit: No
Prerequisites: MATH 1011

Justification:

This course is needed to introduce students to scientific philosophy and methods, in a broad, interdisciplinary way. It will give students the opportunity to see how the different physical sciences relate to each other and to their daily lives. Many colleges and universities in Utah have a similar course.

Student Learning Outcomes:

After completing this course, a student should better understand the universe we live in and our relationship to it. Students will understand the biggest ideas in physical science, particularly that science is a process, a creative human endeavor, rather than a body of facts. Other outcomes should include a better understanding of the workings of the physical world, and of the interdependence of man, nature, and evolving technologies.

Content:

Physical Science 1000 is a General Education course that introduces the student to the some of the scientific disciplines of physical science. Students learn the basic concepts and principlesincluding:
Part 1: Mechanics Motion Newton's Laws Momentum and Energy Gravity Fluids
Part 2: Heat, Atoms, and the Nucleus Thermal Energy Heat Transfer Atomic Structure Radioactivity and Nuclear Power
Part 3: Chemistry Basic Concepts of Chemistry Periodic Table Chemical Interactions Chemical Reactions Acid, Base, and Redox Reactions
Part 4: Earth Science Rocks and Minerals Water and Surface Processes Meteorology
Part 5: Astronomy The Solar System The Stars

General Education Outcomes:

7) Apply scientific reasoning to a variety of contexts.

Most of this course is conceptually based rather than computationally based. Students learn to apply the concepts of the physical sciences. They practice the application of these concepts in almost daily homework assignments which are then discussed in class.

Key Performance Indicators:

Students will be assessed often through in-class quizzes and tests. Homework is assigned on a nearly daily basis to allow students to check their own progress.

Homework assignments: 15%-25% of the final grade
Quizzes: 15%-25% of the final grade
Tests: 30%-40% of the final grade (usually 4)
Comprehensive final exam: 15%-20% of the final grade
Group participation: 10% of the final grade

Representative Text and/or Supplies:

Current edition of Hewitt, et.al., CONCEPTUAL PHYSICAL SCIENCE, Addison Wesley Longman, or equivalent

Optimum Class Size: 30
Maximum Class Size: 36

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)