Course Outline
PHS 113 Principles of Physical Sciences
May 2011

Department: Chemistry and Physical Sciences
Credit Hours: 3
Prerequisite: None
General Education: 7.1 Scientific Literacy
Learning Outcomes: I.C, II.B

I. Course Description:

An introductory study of physics, chemistry, astronomy, earth science and weather. The following topics are explored: motion, energy, heat, wave motion, sound, light, atomic structure, elements, chemical change, the universe, the solar system, rocks and minerals, earthquakes, weathering, and erosion, volcanoes, plates, the atmosphere, clouds, storms, tornadoes, and climate.

II. Purpose of the Course:

To provide students with a basic understanding of some of the more important principles of physics, chemistry, astronomy, earth science and weather.

III. Learning Outcomes and Objectives

L.O. I. Knowledge of Human Cultures and the Physical and Natural World–
Students will engage the big questions, both contemporary and enduring, and gain an understanding of the diversity of human experience and the physical and natural world in order to become well-educated citizens in a global society.
They can:

C. Use knowledge and the methods of inquiry and analysis appropriate to physical or natural sciences, the social sciences, and mathematics to develop well reasoned solutions to local and global issues.

L.O. II. Intellectual and Practical Skills
Students will frame meaningful questions and to answer them will gather pertinent information using appropriate technological tools. They will analyze, synthesize and reflect on that information and effectively apply and communicate the results.
They can:

B. Comprehensively and objectively analyze and evaluate appropriate data (e.g., issues, texts, artifacts, and events) in order to develop an informed conclusion.

IV. Course Objectives

To provide students with a basic understanding of some of the more important principles of physics, chemistry, astronomy, earth science and weather. (L.O. IC, IIB)

V. Topical Outline

I. Metric system
II. Basic calculations
  A. Velocity
  B. Acceleration
III. Newton's laws of Motion
IV. Temperature and kinetic energy
V. Heat transfer
VI. Conversion of heat to work
VII. Atomic structure of the elements
VIII. Formation of compounds
IX. Molecular and ionic formulas
X. Solutions
XI. Acids and bases
XII. Stars and galaxies
XIII. The solar system
XIV. Motions of the Earth

XV. Seasons of the year
XVI. Major categories of rocks
XVII. Rock cycle
XVIII. Earth stratification
XIX. Plate tectonics
XX. Earthquakes and volcanoes
XXI. Folding, faulting, subduction, spreading
XXII. Earth's atmosphere
XXIII. Weather
XXIV. Cloud formation and types of clouds
XXV. Thunderstorms and tornadoes
XXVI. Weather prediction
XXVII. Major climates of the Earth