

Course Description 8th grade Science Phoenix Country Day School

Instructor: Betsy Youngman

Text: Conceptual Physical Science, Hewitt

1st Trimester - Oceanography and Marine Ecology

In the first trimester of eighth grade, students complete their understanding of the complex dynamics of the earth's systems including the atmosphere and the ocean. Building upon the strong seventh grade course of Earth Science, the concept of interdependence is emphasized throughout the term. The course begins with a study of atmosphere and climate. Following this introduction to the planet's energy balance, the course focus shifts to physical oceanography. Not only do students examine the relationships of animals and plants in the ocean, they also examine the physical forces of the ocean such as the role of waves, currents and sea floor features in the system. Most importantly, students examine their own interdependence with the ocean so that they may more fully appreciate the ocean's role in the survival of the planet. Seamlessly combined with the science content of this trimester, lab and technology skills are reviewed and reinforced. Students work with the following computer applications; Word, Excel, Logger Pro, My World GIS, Photoshop and Dreamweaver.

Additionally, the first trimester of 8th grade science includes the goal of reacquainting students with the scientific method in all facets of their work. These dimensions include reading for factual content, forming reasonable hypothesis, and presenting clear and logical arguments in their written and verbal discussions. Students are expected to use quantitative data and appropriate vocabulary in these discussions; a new challenge for some, which when mastered will enhance the precision and quality of their work. Each student's grade is based upon a number of assessments including homework, laboratory reports, laboratory performance exams, class work, tests, quizzes and projects.

2nd Trimester – Fundamentals of Chemistry

In the second trimester of the year the 8th grade students begin their study of chemistry. To begin the unit, each student researches the basic physical and chemical properties of one element. To complete this assignment students use a number of library resources and research techniques. After a brief computer tutorial, students build Inspiration presentations about their elements. These concept maps and the students' models provide the foundations for our discussions and lessons on such topics as the development and rationale of the periodic table. Utilizing this understanding of the characteristics of the elements we build upon the students' knowledge with the study of the principles of chemical reactions and chemical compounds.

3rd Trimester – Introduction to Physics

In the third trimester, we continue our study of chemistry. Students complete a number of laboratory investigations, class discussions and small independent research projects. The students receive an introduction to molecular modeling by studying the "molecules of life". In this unit students participate in model building and simulations of reactions. From this experience students are able to see chemical bonds form and break as they build models of proteins, lipids and carbohydrates. The course of study concluded with an introduction to the concepts of pH, mixtures and chromatography.

At the conclusion of the chemistry unit, we move on to the study of Physics, in particular, Force and Motion. The students work through an introduction to Newton's laws of motion. In honor of Earth Day students study the physics and chemistry of how photovoltaic energy is produced and complete a home energy audit assessing their own energy consumption. As a culminating project for the Physics Unit students build and test small solar cars.

More information about the course can be found here
<http://www.pcds.org/share/sci8/sci8index.htm>