Radnor Township School District
Course Overview

7th Grade Science

General Information

Credits: N/A
Weighted: N/A
Prerequisite: 6th Grade Science
Length: Full Year
Format: Meets Daily
Grade: 7

Course Description

7th Grade Science is a hands-on, inquiry-based learning experience. Students will utilize the scientific method and other problem solving skills to answer questions about the world around them. They will focus their study on cell structure and function including DNA and genetics. Students will also discover similarities and differences between living organisms. During the study of ecology, students will explore various land biomes and how organisms adapt to their environment. Finally, the course allows students to examine the big picture as they identify various components of our environment and how it is affected by human impact.

Course Objectives:

At the conclusion of this course, students will be able to:

- Apply the scientific method to solve problems
- Work collaboratively to obtain data using appropriate scientific equipment and tools
- Create appropriate graphical representations of data
- Formulate testable questions and hypotheses to make predictions and design experiments
- Cite specific textual evidence to support analysis of science and technical texts
- Write a scientific lab report
- Use the compound light microscope accurately to view specimen
- Identify what living things need to survive and how they are classified
- Compare differences between prokaryotic (bacteria) and eukaryotic cells
- Compare / contrast organic and inorganic molecules
- Identify how cell processes move molecules in living cells
- Explain the transfer of energy in cells
- Explain how traits are inherited
- Identify clues of evolution
- Identify factors that influence changes in population size
- Describe how energy flows through ecosystems
- Compare renewable and nonrenewable resources
- Identify alternatives to fossil fuel
- Identify similarities and differences between various land biomes

Common Assessments:

1st Semester:
- Picturing Life Making a Biological Diagram
- -Scientific Tools Identification Quiz
-Metric Conversion Quiz
-Vertruvian Man Lab
-Quarter 1 Independent Project: Scientist Research
-Drops on a Penny Formal Lab
-Write it Up
- Scientific Method Quiz
-Graphing Lab

--Microscope Lab
-Microscope Quiz
- Plant and Animal Cell Lab
-Cell Webquest
-Cell Project
-Chemistry of Life Quiz
- -Cancer Growth Animation
-Life Structure and Function Test Chapter 1
-Mitosis Project
-Cell Processes Test
-2nd Quarter Independent Project: "Scientist for the Day"
-Heredity Test
-DNA Model
-DNA Extraction Lab
--Punnett Squares Lab
- -The Omnivore's Dilemma reading and journaling
- Vocabulary Quizzes for Each Chapter / Unit
-Midterm

2nd Semester:

--3rd Quarter Independent Project / Scientific Novel
-Bean Bunny Evolution Lab
- Classification Webquest
-Bacteria Lab
-Bacteria and Virus Quiz
-Protist and Fungi Quiz
-Plant Lab and Webquest
-Plant Test
- Clouds / Cockatoos and Cacti Lab
-Biome Project
-Alternative Energy Project
-The Omnivore's Dilemma Reading and Journaling
-Final Exam

Major Units of Study:

Unit 1: Science is…Experimental Design
Unit 2: Cells and Cell Processes
Unit 3: Heredity and Genetics
Unit 4: Adaptations and Natural Selection
Unit 5: Bacteria, Viruses, Protists and Fungi
Unit 6: Plants
Unit 7: Environment and Ecology
Unit 8: The Omnivore's Dilemma

Materials & Texts

Textbooks: Life's Structure and Function, Glencoe/McGraw-Hill, 2002, Bacteria to Plants, Glencoe/McGraw –Hill 2002, Ecology, Glencoe/McGraw-Hill, 2002
Lab Supplies: including but not limited to microscopes, prepared kits, scientific tools and measuring equipment (stop watch, scales, beakers, graduated cylinders, meter stick, rulers, etc.), prepared slides, specimen(protists, plants, fungi, plant and animal cells) , Petri dishes, pipettes, test tubes, etc.
Art Supplies: paper, scissors, pencils, graph paper, highlighters, post-its, etc. for in class projects and models
Technology: Computers, scientific software, DVD's , teacher webpage, on-line tutorials and web-quests, ipads, schoology
Literature: Fiction and nonfiction novels (Young Readers Edition of The Omnivore's Dilemma by Michael Pollan and a Science Fiction novel of choice