Physical Science

Overview: Students in grade nine are generally enrolled in Physical Science. The academic standards for Physical Science establish the scientific inquiry skills and core content for all Physical Science classes in South Carolina schools. The course should provide students with a conceptual understanding of the world around them — a basic knowledge of the physical universe that should serve as the foundation for other high school science courses. The standards should be used to make decisions concerning the structure and content for Physical Science classes that are taught. These decisions involve choices regarding additional content, activities, and learning strategies and depend on the particular objectives of the individual classes. All Physical Science classes must include inquiry-based instruction, allowing students to engage in problem solving, decision-making, critical thinking, and applied learning. In other words, students should spend more of their class time choosing the right method to solve a problem and less time solving problems that merely call for repetitive procedures.

For a complete listing of the Physical Science Indicators, go to http://ed.sc.gov/topics/curriculumstds/subjects, download the 2005 Academic Science Standards and refer to pages 61-68.

The physical science course is divided into two sections. One section is an introduction to chemistry and the other is an introduction to physics. Scientific inquiry is integrated continually throughout both sections.

The standards addressed in each part of physical science include:

Scientific Inquiry
- Demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions

Chemistry: Structure and Properties of Matter
- Demonstrate an understanding of the structure and properties of atoms
- Demonstrate an understanding of various properties and classifications of matter
- Demonstrate an understanding of chemical reactions and the classifications, structures, and properties of chemical compounds

Physics: Interactions of Matter and Energy
- Demonstrate an understanding of the nature of forces and motion
- Demonstrate an understanding of the nature, conservation, and transformation of energy
- Demonstrate an understanding of the nature and properties of mechanical and electromagnetic waves

Activities:

Have your child:
- View programs such as NOVA on PBS
- View programs such as Mr. Wizard and Bill Nye the Science Guy on the Discovery Channel
- Discuss current science events in the nightly news and in the newspaper
- Attend local science fairs, museums, the Roper Mountain Science Center in Greenville, and a planetarium
- Investigate activities of the SC Junior Academy of Science at http://www.scacadscience.org
- Build model rockets or electronic devices from kits
- Cook by following a recipe and by varying a recipe
- Conduct soil or water tests on your property and research the acceptable levels of dissolved materials necessary for various plant and animal needs
- Read labels and discuss the function of ingredients in various substances, such as foods and cleaning products
- Learn to play musical instruments and discuss the variables that influence the pitch and the volume of the tones produced
- Research energy efficiency when purchasing a car or an appliance
- In the context of an eye exam, research and discuss how various lenses can correct vision

Web Sites
- Exploratorium — www.exploratorium.edu
- Frank Potter’s Science Gems—more than 14000 science resources sorted by category and grade level — www.sciencegems.com
- Center for Improved Engineering and Science Education — http://www.k12science.org/currichome.html
- The Smithsonian Institution — www.si.edu
- Amusement Park Physics — http://www.learner.org/exhibits/parkphysics/