



Course Syllabus

SY 2008-09

COURSE TITLE: Science – Grade 1

PREREQUISITE: N/A

DESCRIPTION: In science, special emphasis is placed on the research process in all grades. This includes making decisions about the generation and testing of ideas; prediction, measurement, data collection and representation; evaluation of sources of information; collaborative investigation; interpretation and communication of findings; evaluation and verification of findings and considerations relating to the social context of research. First graders plan simple experiments to investigate scientific phenomena, and draw conclusions based on data collected. Measuring is done in standard and nonstandard units. Several simple kinds of motion are investigated. Students discover the solubility of various substances in water. Plants and animals are classified according to their characteristics. Students also investigate the relationships between the sun and earth, seasonal changes, and animal activity. They discover that limited resources must be used wisely.

MAIN TOPICS: Investigate objects that exhibit various types of motion and the changes that occur by pushing and pulling.

Investigate the interaction of various materials with both hot and cold water.

Investigate and classify plants using their characteristics, needs, and parts.

Describe and classify animals (including people) using life needs, physical characteristics, and lifestyle characteristics.

Identify relationships between the Earth and the Sun.

Identify the relationship of seasons and weather changes and their effect on the life processes of plants and animals.

Identify natural resources, their use, and factors affecting them.

CREDIT INFO: N/A



Course Syllabus

SY 2008-09

COURSE TITLE: Science – Grade 2

PREREQUISITE: N/A

DESCRIPTION: In science, special emphasis is placed on the research process in all grades. This includes making decisions about the generation and testing of ideas; prediction, measurement, data collection and representation; evaluation of sources of information; collaborative investigation; interpretation and communication of findings; evaluation and verification of findings and considerations relating to the social context of research. Second graders repeat observations to verify ideas and to explain unexpected findings. Metric as well as standard units of measure are utilized. Physical models are built to enhance understanding. Also studied are the concepts of change of state; weather patterns, and seasonal effects on plants and animals; the process of flowering; interdependence in food chains; and weathering. Students explore the uses of magnets by making a compass.

MAIN TOPICS:

- Recognize that plants and animals go through orderly changes in their life cycles.
- Classify and distinguish between forms and properties of matter and describe changes in matter from one state to another.
- Collect and classify data through investigations. Graph and illustrate results, then verify their measurements.
- Investigate and understand characteristics and uses of natural and artificial magnets.
- Understand living systems and the interdependence of living organisms and their surroundings. Recognize that habitats change due to many influences.
- Identify the basic types and patterns of weather. Learn various meteorological terms and the importance and use of weather data.
- Investigate and understand weather and seasonal changes on plants, animals, and surroundings. Examine effects of growth and behavior of living things as well as land surfaces.
- Investigate and understand the importance of plants for providing oxygen, food, products, and benefits in nature.

CREDIT INFO: N/A



Course Syllabus

SY 2008-09

COURSE TITLE: Science – Grade 3

PREREQUISITE: N/A

DESCRIPTION: In science, special emphasis is placed on the research process in all grades. This includes making decisions about the generation and testing of ideas; prediction, measurement, data collection and representation; evaluation of sources of information; collaborative investigation; interpretation and communication of findings; evaluation and verification of findings and considerations relating to the social context of research. Third graders formulate hypotheses, make inferences, and use the metric system with more precision while conducting investigations. Focus is placed on simple and compound machines, energy, and a basic understanding of matter. Habitats, environmental relationships to adaptations, and food chains are investigated. The study of physical adaptation concerns the key body parts of plants and animals. Geology is introduced through the study of soil components and types of rocks. Natural patterns such as moon phases, tides, seasons, life cycles and water cycles are examined.

MAIN TOPICS: Investigate the behavioral and physical adaptations animals use to live, reproduce and eat.

Describe objects in terms of their composition and physical properties.

Classify various types of simple machines. Explain their functions and give common examples.

Compare and contrast simple and compound machines.

Investigate the relationships among aquatic and terrestrial food chains.

Identify how various environments support the diversity of plants and animals that share the system's resources.

Recognize basic sequences and cycles in nature.

Identify the major components of soil. Understand its importance to animals, plants, and people.

Explain the water cycle. Recognize water's importance to life on Earth.

Investigate and understand natural events, and how people can influence the survival of various species.

Distinguish the different sources of energy. Identify the difference between renewable and nonrenewable resources.

Collect and classify data through investigations. Develop questions, and make inferences and predictions. Use metric measurements. Produce graphs and charts.

CREDIT INFO: N/A



Course Syllabus

SY 2008-09

COURSE TITLE: Science – Grade 4

PREREQUISITE: N/A

DESCRIPTION: In science, special emphasis is placed on the research process in all grades. This includes making decisions about the generation and testing of ideas; prediction, measurement, data collection and representation; evaluation of sources of information; collaborative investigation; interpretation and communication of findings; evaluation and verification of findings and considerations relating to the social context of research. Fourth grade students expand their knowledge of food webs; plant anatomy and reproduction; and the importance and conservation of Virginia's natural resources. They use experimental methods and specialized equipment to investigate work and energy. Variables that must be held constant in an experimental situation are defined. Students give more formal explanations of electricity, magnetism, weather, seasons, and solar and lunar eclipses.

MAIN TOPICS:

- Identify the structures of typical plants.
- Classify plants with respect to their reproductive processes.
- Understand basic plant life processes including photosynthesis.
- Discover how animals interact and adapt to their environment. Relate this information to present environmental concerns.
- Describe the energy flow through living systems.
- Select appropriate tools to measure mass, volume, and density, through simple experiments, and verify the results of these experiments.
- Investigate characteristics and interactions of moving objects.
- Experiment with forces, friction and kinetic energy.
- Describe the basic types of energy used in everyday living.
- Understand the characteristics and relationships between electricity and magnetism.
- Identify weather phenomena and tools, and describe how they are used to predict weather.
- Investigate the relationship between the earth, moon, and sun, in respect to seasons, phases of the moon, and Earth's unique properties.

CREDIT INFO: N/A



Course Syllabus

SY 2008-09

COURSE TITLE: Science – Grade 5

PREREQUISITE: N/A

DESCRIPTION: In science, special emphasis is placed on the research process in all grades. This includes making decisions about the generation and testing of ideas; prediction, measurement, data collection and representation; evaluation of sources of information; collaborative investigation; interpretation and communication of findings; evaluation and verification of findings and considerations relating to the social context of research. Fifth graders use classification keys to identify organisms. Cell structure is introduced, as well as atoms, molecules, and the properties of light, sound, and matter. Students further their knowledge of the changing surfaces of the Earth and ocean floors through the study of weathering, the rock cycle, erosion, ocean environment, plate tectonics, and the basic structure of the Earth's interior.

MAIN TOPICS: Identify cell structures.

Explain the classification of animals and plants.

Distinguish the difference between elements, mixtures, compounds, solutions, and atoms.

Explain the effect of heat on the states of matter.

Explain how sound travels and its uses as a means of communication.

Describe the characteristics of visible light and light waves.

Investigate how light can be transmitted, reflected and refracted.

Identify geological, physical, and biological characteristics of oceans.

Describe the rock cycle and identify rock types.

Explain changes in the Earth's surface using the Earth's history and fossil evidence.

Investigate plate tectonics with regard to earthquakes and volcanoes.

Explain how weathering and erosion cause changes on the Earth's surface.

CREDIT INFO: N/A