Bethlehem Lutheran School, Lakewood, CO
Science Curriculum Grade 6 (revised 4/01)

God created, rules and orders His universe. Science is the framework through which we discover, observe, analyze and synthesize the natural laws of God's creation. Understanding these laws and the systematic nature of the world assists and enhances the student's awareness and ability to be a better steward of God's earth and universe.

Science provides a conceptual framework for the understanding of natural phenomena and their causes and effects. Science study develops students who are scientifically literate, able to recognize that science is not value-free, and are capable of making ethical and moral judgments regarding science, social and technological issues.

To provide the student with an understanding of God's creation in the areas of Life Science, Physical Science, and Earth Science through facts, observation, and experimentation.

State Standard 1

Students understand the processes of scientific investigation and design, conduct, communicate about and evaluate such investigations.

Classroom objectives

1.1 Choose measurement methods and devices according to the level of precision demanded by the problem.
1.2 Predict an outcome based set of experimental data.
1.3 Recognize that sometimes scientific investigations lead to new methods or procedures for conducting an investigation or new technologies to improve the collection of data.
1.4 Construct a model that illustrates a concept developed from an inquiry.
1.5 Refine hypothesis from a previous investigation.
1.6 Identify the variables in an investigation.
1.7 Create a written plan to include the question to be investigated, an appropriate hypothesis, design of the experiment, identification of the variables, a developed scientific procedure to collect and record data; the design should also include a number of repeated trials, accurate measurements and record keeping and a comparison to a control.
1.8 Organize and present the data in appropriate formats (e.g. histograms, circle graphs, flow charts) and make inference based on that data.
1.9 Identify, and interpret patterns, trends, relationships in collected data.
1.10 Identify data that does mot fit a pattern.
1.11 Analyze the results of an experiment, draw conclusions about the question being investigated, and defend those conclusions.
1.12 Use metric units in measuring, calculating, and reporting results.

State Standard 2

Physical Science: Students know and understand common properties, forms, and changes in matter and energy.

Classroom objectives

2.1 Describe the difference between the student's own weight and mass.
2.2 Construct models of several kinds of atoms and describe their general properties (nucleus, proton, neutron, electron).
2.3 Use laboratory investigations to demonstrate the formation of new compounds.
2.4 Investigate changes in the state of water and use the particle model to explain these changes.
2.5 Design a simple circuit that can do work and explain the energy transfer taking place in the system.
2.6 Calculate the average speed of a toy or an animal moving in a straight or curved path by making appropriate measurements (motion of an object can be described by its position, direction of motion, and speed).
2.7 Measure the various net forces acting on an object and their effects (explain in terms of forces involved, why a satellite orbits the Earth).
2.8 Know that energy can be carried from one place to another by heat flow or by waves including water waves, light and sound, or by moving objects.

State Standard 3

Life Science: Students know and understand the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment.

Classroom objectives

3.1 Explain how adaptations affect a species survival.
3.2 Explain interactions and interdependence of nonliving and living components within ecosystems with first order consumers, second order consumers, biotic factors and biotic factors.
3.3 Explore bio-diversity in ecosystems.
3.4 Know that energy entering ecosystems as sunlight is transferred by producers into chemical energy through photosynthesis and then from organism to organism in food webs.
3.5 Categories organisms according to their roles in food chains and food webs as carnivores, herbivores, omnivores, producers, consumers, or decomposers.
3.6 Identify the difference between pant and animal cells.
3.7 Identify parts of a cell explaining the structure and function of a cell.
3.8 Describe the role of chromosomes and genes in heredity 9e.g. a typical cell of any organism contains genetic instructions that specify its traits; these trait may be modified by environmental influences.
3.9 Understand that DNA is the genetic material of living organisms and is located in the chromosomes of each cell.

State Standard 4

Earth and Space Science: Students know and understand the processed and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space.

Classroom objectives

4.1 Know that soils are found in layers with each having a different composition and texture.
4.2 Know that layers of sedimentary rocks confirm the long history of the earth and its changing life forms.
4.3 Use characteristics to identify selected minerals and rocks.
4.4 Explain the difference between rocks and minerals.
4.5 Describe the major differences in the physical properties of water as a solid, liquid, and gas.
4.6 Describe the cycling of water in a closed system (e.g. bottle terrarium).
4.7 Know that the Solar System forms part of the Milky Way Galaxy which is one of many galaxies that comprise the Universe.
4.8 Know that the nine planets, their respective moons, comets, many asteroids and meteorites orbit the sun which is the gravitational center of the Solar System.
4.9 Know that the path of the planet around the sun is due to the gravitational attraction between the sun and the planet.
4.10 Know that the sun, an average star, is the central and largest body in the solar system and is comprised primarily of hydrogen and helium.

State Standard 5

Students know and understand interrelationships among science, technology and human activity and dhow they can affect the world.

Classroom objectives

5.1 Describe how people use science and technology in their profession.
5.2 Describe ways in which innovations address human biological, physical, and psychological needs.
5.3 Describe uses of renewable and non-renewable resources (e.g. forests and fossil fuels).

State Standard 6

Students understand that science involves a particular way of knowing and understand common connections among scientific disciplines.

Classroom objectives

6.1 Know that scientific knowledge is subject to modification as new information.
6.2 Challenge prevailing theories and new theories lead to looking at old observations in a new way.
6.3 Know that studies of the events that led scientists to discoveries can provide information about the inquiry process and its effects.
6.4 Know that a change is one or more variable may alter the outcome of an investigation.
6.5 Recognize the scientific contributions that are made by individuals of diverse backgrounds, interests, talents, and motivation.
6.6 Know that when similar investigations give different results, the scientific challenge is to verify whether the differences are significant by further study.
6.7 Recognize that patterns exist within and across systems.