Bethlehem Lutheran School, Lakewood, CO
Science Curriculum Grade 7 (revised 6/11)

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 to be scientifically literate, to be able to recognize that science is not value-free, and to be capable of making ethical and moral judgments regarding science, social and technological issues.

The science curriculum of Bethlehem Lutheran School will provide the students 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

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

Classroom objectives

1.1 The students will be able to describe how vacuum tubes, transistors, and integrated circuits are alike and how they are different.

1.2 The students will be able to comment on the four features of a wave and relate how each is important in wave theory.

1.3 The students will be able to distinguish between potential and kinetic energy.

1.4 The students will be able to explain the difference between physical and chemical properties, compounds, mixtures, and solutions.

1.5 The students will be able to describe the relationships among frequency, wavelength, speed, and energy of waves.

1.6 The students will be able to describe the basic particles of an atom and their corresponding electrical charges.

1.7 The students will be able to explain and illustrate how electricity can produce magnetism.

1.8 The students will be able to state the law of magnetic poles.

1.9 The students will be able to define electric charge, electric current, and explain the difference between parallel and series circuits.

1.10 The students will be able to explain what is meant by "magnetic domain", and describe the domains of both a magnetized and an un-magnetized piece of iron.

1.11 The students will be able to describe sound, list its properties, and describe how various musical instruments produce sound.

1.12 The students will be able to describe the relationships among frequency, wavelength, speed, and energy.

1.13 The students will be able to list the ways in which laser light differs from other forms of light and describe how laser light is produced.

1.14 The students will be able to explain the behavior of light as it strikes concave and convex mirrors, and when it passes through concave and convex lenses.

1.15 The students will be able to distinguish between transverse and compressional waves.

1.16 The students will be able to discuss the properties of light in terms of visible spectrum, color, primary, additive, and subtractive properties.

1.17 The students will be able to list three types of heat transfer and explain the affect heating and cooling has on the size of an object.

1.18 The students will be able to distinguish between heat and temperature.

1.19 students will be able to define reflection, refraction, interference, polarization, and electromagnetic spectrum

State Standard 2

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

2.1 The students will be able to express his view of creation and support this view with numerous scientific facts.

2.2 The students will be able to articulate the fallacies often associated with the assumptions that the earth is millions of years old as a result of evolution.

2.3 The students will be able to question the reliability of the geologic column and the methods of determining the age of rock, fossils, and other artifacts.

State Standard 3

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

3.1 The students will be able to list the causes of tsunamis and describe the methods to avoid injury during an earthquake.

3.2 The students will be able to describe the thunderstorm cycle, the conditions necessary for tornadoes and hurricanes.

3.3 The students will be able to locate the four major oceans, describe the four habitats of the ocean, and explain the reason for the salinity of the oceans.

3.4 The students will be able to recognize various physical features believed to be constructed by the ice age.

3.5 The students will be able to relate how the water cycle, the different types of river systems help change the landscape.

3.6 The students will be able to explain how wind, gravity, and ice all contribute to the erosion process,

3.7 The students will be able to discuss how groundwater is related to the water cycle and how the action of waves helps to shape the shoreline.

3.8 The students will be able to articulate the basic geological features that are common to the geography of North America.

3.9 The students will be able to explain how water, oxygen, and acids affect chemical weathering.

3.10 The students will be able to define weathering, and describe how erosion and deposition change the earth's surface.

3.11 The students will be able to identify various physical features formed by volcanic activity.

3.12 The students will be able to discuss the three types of seismic waves.

3.13 The students will be able to describe the various types of volcanoes and what causes a volcano to erupt.

3.14 The students will be able to describe earthquakes, their causes, their relationship to faults, and the locations where they are likely to occur.

3.15 The students will be able to discuss the theories of continental drift, plate tectonics, and other motions relating to the Earth's crust.

3.16 The students will be able to describe mechanical weathering, and explain how shape of the land, animals, and other factors affect soil.

3.17 The students will be able to understand, read, and use a contour map to gain desired information.

3.18 The students will be able to explain the differences between igneous, sedimentary, and metamorphic rocks.

3.19 The students will be able to recognize and categorize a variety of minerals using the basic identification tests.

3.20 The students will be able to define latitude and longitude and be able to use them to find a specific location on a map.

3.21 The students will be able to locate and recognize various constellations and stars.

3.22 The students will be able to give the various stages of the life cycle of a star, from birth to death.

School Standard 1

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

Classroom objectives

1.1 The students will be able to define length, volume, mass, density, and identify the units used to make scientific measurements.

1.2 The students will be able to explain how scientists use the scientific method to solve problems.

1.3 The students will be able to analyze data and make conclusions based on data collected from a "hands on" experiment.

1.4 The students will be able to form and write a hypothesis, collect data, analyze the data, and for a conclusion by conducting various laboratory experiments.

1.5 The students will be able to demonstrate safe laboratory procedures by conducting a variety of experiments in the laboratory.

School Standard 2

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

Classroom objectives

2.1 The students will be able to explain how oceans, lakes, mountains, human activities, and other land features affect our climate.

2.2 The students will be able to list ways in which humans can pollute our water supply and also how humans can help reduce or eliminate pollution.

2.3 The students will be able to illustrate how important water is to nature and explain why we must manage our water resources wisely.

2.4 The students will be able to understand how tides are produced and more clearly see God's handiwork in all of nature.

2.5 The students will be able to articulate reasons for conservation of and wise use of the many energy sources God has entrusted to us to use.

2.6 The students will be able to expound on the different air masses and how they affect our climate.

2.7 The students will be able to better understand how God in his infinite wisdom designs special relationships between organisms and equips organisms to exist in the various depths of the ocean.

2.8 The students will be able to describe the life forms dominant in each habitat, relate how the ocean is important as a source of food, energy, oxygen, and must be managed responsibly.

2.9 The students will be able to define evaporation, condensation, relative humidity, and explain air masses and how they affect our climate.

2.10 The students will be able to explain how the wind belts are formed and what the differences in air pressure affect the movement of air.

2.11 The students will be able to list the major gases in the atmosphere, describe the four layers of the atmosphere, explain the greenhouse effect, and how the ozone layer is important to our survival.

2.12 The students will be able to list several types of renewable sources of energy and also nonrenewable sources of energy.

School Standard 3

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

Classroom objectives

3.1 The students will be able to articulate both verbally and through writing how science information is disseminated throughout the world.

3.2 The students will be to access the Internet and be able to acquire reliable data and information concerning various topics of scientific study.

3.3 The students will be able to express how science information becomes scientific law.