

Science Curriculum

Philosophy

Science at Word of Life Lutheran School is taught in the light of God's Word. Although the world may promote its philosophies of humanism and evolution as the truth, we assert that God's Word is Truth. We teach science to better understand the created world of the our God recognizing and appreciating that the Lord reveals Himself in nature and works through it as the creator and ruler of the universe. The study of life science, physical science, and earth science allows us to apply the laws of science to our daily lives. All areas of learning in the science field reveal the all-powerful hand of God. The creation has been affected by sin resulting in frustration, death, and decay. We Christians live in a sin-blemished world. Science teaches us to be good stewards of the world the Lord has given us. Finally, the basic fundamentals and principals of science will be taught in the light of God's Word with every thought being made captive to the Word of Christ who is worthy of our praise.

Objectives

Preschool

Life Science

1. Demonstrate the use of all five senses.
2. Explain unsafe situations in using each sense.
3. Distinguish between living and nonliving things.
4. Tend plants and animals (or monitor pets from home via reports from other children).

Earth Science

1. Connect lighted spaces to sun, moon and artificial sources.
2. Identity a day.
3. Recognize a week.
4. Keep a daily weather record.
5. Describe differences in seasons.
6. Observe consciously the environment.
7. Identify the globe as a symbol of the earth.

Physical Science

1. Classify objects on the basis of properties (i.e. shapes, size, color, matter, etc.).
2. Explore color.
3. Relate objects and shadows.
4. Perform simple experiments.

Kindergarten

Life Science

1. Learn how plants need air, soil, light and water to grow.
2. Learn how plants grow from seeds and that each plant has its own special seed.
3. Learn about animals as pets, work animals, jungle animals, farm animals and animals that live in the woods.
4. Learn about the five senses and the body parts where they are found.
5. Learn good hygiene practices and do a study of nutrition.

Earth Science

1. Learn about the sky and the stars and how the sky looks differently at night and during the day.
2. Learn about the weather and learn the symbols that show the different weather conditions.
3. Learn about using a thermometer to see whether the temperature goes up or down.
4. Learn about rainbows and the order of the colors of the rainbow.

Physical Science

1. Explore pushes and pulls and how they affect the objects that they are using.
2. Learn about lengths and weights of different objects.
3. Learn about how things work by using experiments and other activities.
4. Learn about matching objects by using more than one attribute.

First and Second

Life Science

1. Identify living/non-living things.
2. Define "habitat".
3. Tell how plants, animals and humans use air, water, and soil.
4. Discuss plant structure.
5. Show the growth stages of plants, animals and humans.
6. Compare and contrast animals.
7. Compare body characteristics.
8. Discuss the food pyramid and nutrition.
9. Discuss staying healthy through exercise and sleep.
10. Discuss dental hygiene.

Physical Science

1. Observe and describe how magnets attract and repel.
2. Discuss the properties of solids, liquids and gases.
3. Explore the characteristics of light.
4. State that light and sound behave as waves.
5. Explain how we hear sounds.

Earth Science

1. Discuss weather changes related to the seasons.
2. Observe and record changes in the weather.
3. Study models/posters of the solar system.
4. Observe the earth as a globe.
5. Brief and basic discussion of the planets.

Third and Fourth

Life Science

1. Compare animal and plant cells.
2. Describe the characteristics of an organism.
3. Explore ways living things can be classified.
4. Understand how living and non-living things interact in an ecosystem.
5. Explore factors that change ecosystems.
6. Describe the structures and function of roots, stems, and leaves.
7. Contrast photosynthesis and respiration.
8. Trace the life cycle of flowering plants.
9. Describe the structure and function of organ systems in animals.
10. Describe the ways animals change as they grow.
11. Compare and contrast different ways animals reproduce.
12. Discover how body parts and behaviors help animals survive.

Physical Science

1. Identify and describe matter.
2. Measure matter using non-standard and standard units of measure.
3. Understand that matter can be classified, mixed, and combined.
4. Compare and contrast physical and chemical changes.
5. Understand how speed, force, energy, and work are related.
6. Discover how machines make work easier.
7. Understand how speed, force, energy and work are related.
8. Describe the characteristics of static electricity.
9. Describe how electric circuits work.
10. Describe the properties of magnets and magnetic fields.
11. Understand how electricity is made.

Earth Science

1. Compare, contrast, and identify rocks and minerals.
2. Describe the rock cycles.
3. Explain how Christians can understand fossils.
4. Explain how forces change the shape of the earth.
5. Describe the three different soil horizons.
6. Describe the structure of the earth.
7. Explain the reasons for day and night, the seasons, and the phases of the moon.
8. Identify the planets and other bodies in the solar system.
9. Describe the physical features of the oceans.
10. Explain how ground water forms.
11. Describe the steps of the water cycle.
12. Describe how ocean currents and tides are produced.
13. Explain how water travels through the soil and under ground.
14. Explore ways to use and conserve water.
15. Understand the conditions of our atmosphere which create weather.
16. Explain the factors which affect climate.

Fifth and Sixth

Life Science

1. Observe how all plants have common characteristics.
2. Explain how all plants have certain parts with the same function.
3. Explain how plants make food and produce oxygen through photosynthesis.
4. Describe the differences and similarities between vascular and nonvascular plants.
5. Observe and explain how fertilized flowers produce seeds that become plants.
6. Compare seed plants.
7. Explain how plants have certain behaviors and adaptations that help them survive.
8. Discover how animals can be classified using various characteristics.
9. Describe how ecosystems have living and non-living parts.
10. Explain how food chains and webs describe the feeding relationships in an ecosystem.
11. Observe and describe how the Earth's systems recycle materials.
12. Compare how living and non-living things interact in an ecosystem.
13. Explain how ecosystems go through both slow and sudden changes.

Earth Science

1. Describe the solar system and how it consists of planets, moons, and other bodies.
2. Explain how forces on and under the Earth shape its surface.
3. Describe the earth's crust and how it contains many types of minerals.
4. Explain how rock's can be classified according to their composition and properties.
5. Describe how the Earth's atmosphere supports life on earth.
6. Investigate how fresh water is constantly renewed by the water cycle.
7. Explain how some energy resources are inexhaustible while some run out.
8. Investigate how oceans are an important natural resources.
9. Discover how the sun warms the earth's surface
10. Describe how water on the earth's surface changes form and affects weather.
11. Explain how clouds form and produce precipitation.
12. Describe how wind is formed.
13. Describe where weather changes occur.
14. Investigate severe storms.
15. Investigate climates.

Physical Science

1. Investigate and describe matter.
2. Describe and explain what matter is made of.
3. Explain the states of matter.
4. Describe mixtures and solutions.
5. Explain how matter can undergo chemical and physical changes.
6. Investigate acids and bases.
7. Explain how chemical changes often release energy.
8. Investigate Newton's three laws of motion.
9. Describe the force of gravity.
10. Investigate sound waves and their different aspects.
11. Describe how light is a form of energy.
12. Explain the reflection and refraction of light.
13. Investigate the electromagnetic spectrum.
14. Explain forces and motion.
15. Describe speed and velocity as characteristics of motion.
16. Investigate and describe simple machines.

Seventh and Eighth

Life Science

1. Organize their learning of plants and animals with classification charts.
2. Compare the life cycles of various organisms.
3. Name the structure and functions of the parts of a flowering plant — stems, roots, leaves, flowers, etc.
4. Explain the food web.
5. Investigate the diversity among animals from amoeba to mammals.
6. Compare transpiration and respiration in plants and animals.
7. Compare coordination, support, and locomotion in animals of varying complexity.
8. Compare reproduction across the animal kingdom.
9. Explain how development is controlled in animals.
10. Explain diffusion and osmosis and give examples of each.
11. Discuss cell division and mitosis meiosis and explain what happens to chromosomes during mitosis and meiosis.
12. Describe the skin and list examples of its function.
13. Explain the structures of the bones and how pairs of muscles help bones move.
14. Explain the structures and functions of the parts of the digestive, respiratory, circulatory, excretory, nervous, endocrine and reproductive systems.
15. Evaluate the effect of drugs and alcohol on human systems.
16. Discuss and practice elements of good nutrition.

Earth Science

1. Observe and compare plant and animal cells.
2. Identify interrelations among organisms in nature.
3. Evaluate several current problems in the biosphere and ways in which man affects the state of the biosphere.
4. Explain photosynthesis, the water cycle, nitrogen cycle and other natural cycles.

Physical Science

1. Explain the atomic theory and list some differences between atoms and molecules.
2. Use the periodic table to describe atomic relationships.
3. Write and explain balanced chemical equations for everyday processes.
4. Measure forces and use them to accelerate carts and lift objects.
5. Measure the energy of work ($f \cdot d$), kinetic energy of carts ($\frac{1}{2}mv^2$), potential of gravity and momentum (mv).
6. Use the atomic molecular model to explain the behavior of acids and bases.
7. Learn to produce, collect and identify common gases.
8. Use the ideas of chemistry to explain the changes in everyday things — kitchen chemistry; air, land, and water pollution; the ozone problem; organic molecules.
9. Demonstrate the electrical nature of matter — circuits, static electricity, dissociation of water, etc.
10. Order the behavior of wave and particle behavior.