

**Zion Lutheran School**  
**Science Curriculum**

**Philosophy of Teaching Science at Zion Lutheran School**

Science at Zion Lutheran School is taught in light of God's Word. Although the world may promote philosophies of humanism and evolution as the truth, we assert that God's Word is truth. We teach science to explore and more fully appreciate God's handiwork and how He preserves His creation.

God's Word will guide us as our students learn the basic fundamentals and principles of science. In addition, the scientific method of research, experimentation, and discovery will be emphasized as a means of gaining new knowledge. Through this education, our students will learn to become effective managers of the world the Lord has given us.

# Physical Science

## Kindergarten

### 1. Matter

- Objects are made by God in nature or by people through industry, and can be sorted by their different characteristics

## 1-2 Grade

### 1. Matter and Energy

- All things are made of matter and are either a solid, liquid, or gas.
- Matter can change physically or chemically.
- Heat, light, and sound are forms of energy which can move or change matter.

## 3-4 Grade

### 1. Energy

- Heat, light, sound and electricity are all forms of energy

### 2. Matter

- Matter is anything that takes up space and has mass
- Matter can be transformed or transferred.
- Types of matter can be distinguished based on their distribution of particles.
- Matter can change physically and/or chemically.
- Elements are the building blocks of matter.

### 3. Motion

- Magnets are forces that push and pull.
- Pushes and pulls are forces which move things.
- Gravity is one force everywhere on Earth.
- Machines make work easier for us.

## 5-6 Grade

### 1. Matter

- God created all matter.
- Matter consists of atoms (elements) containing sub-atomic particles that can be represented in the form of a model.
- The basic elements can be combined to form compounds.
- Matter can change form either physically or chemically.
- Careful observation can lead us to identify chemical and physical changes in matter.
- Despite physical or chemical changes, the total mass of matter in the universe remains constant.

### 2. Motion

- The laws of motion and force have been established by God.

- Man had created simple machines to increase or decrease forces.
- Forces and how they are applied can determine motion, which can be measured and changed in terms of speed, direction, and position.
- Forces can be mechanical, magnetic, electrical, or gravitational.

### 3. Energy

- Energy cannot be created or destroyed, but only converted from one form to another.
- Energy can either be transferred or transformed.
- There are different forms of energy, including thermal, electrical, chemical, and mechanical.
- God has given man energy so that he can control his environment for his own benefit and the benefit of other living things.

## 7-8 Grade

### 1. Matter

- Matter is made up of atoms and molecules provide the basis for understanding its properties.
- Pure substances can be identified by properties which are independent of the sample of the substance and the properties can be explained by a model of matter that is composed of small particles.
- Recognize that acids are compounds whose properties include a sour taste, characteristic color changes with litmus and other acid/base indicators, and the tendency to react with bases to produce a salt and water.

### 2. Energy

- Ocean and seismic waves transfer energy without the transfer of matter.

# Earth and Space

## Kindergarten

1. Interdependence within earth systems
  - God made the (universe) in an orderly manner, with each part serving a specific purpose.
  - The sun is a source of heat and light that affects weather.
2. Weather
  - Wisconsin has four distinct seasons which causes significant changes in weather.
  - People have to prepare for the different types of weather that affect Wisconsin.
  - Monitoring weather helps us to logically organize data and can show patterns in how different types of weather develop.

## 1-2 Grade

1. Earth Structure and Processes
  - Earth's surface can be destroyed and changed slowly or quickly.
  - God created the Earth for us. We need to take care of this blessing.
  - (God is in control of the Earth's natural events) We trust God to watch over us and He controls the weather.
2. Interdependence Within the Earth Systems
  - Day and night is caused by Earth's rotation on its axis.
  - Seasonal changes in climate are caused by the tilt of the Earth and its orbit around the sun.
  - There are 8 planets in our solar system, which all orbit the sun.
  - Weather can be described in measurable quantities and changes from day to day and with the seasons.

## 3-4 Grade

1. Earth structures and processes
  - Rocks are Earth materials that may vary in composition.
2. Interdependence within Earth's systems
  - Water is one of our most valuable resources which can replenish itself through process known as the water cycle.
  - Water is naturally transferred from place to place.
  - Air temperature, air pressure, and wind all influence the kind of weather
3. Human interactions with living systems
  - In order to improve their existence, humans interact with and influence the Earth's systems.
  - There are renewable and nonrenewable resources that we use everyday.

- We need to promote and practice conservation with all the resources God has given us.
3. The Universe
- Our solar system includes the sun, eight planets, their moons, and other objects.
  - The sun and moon have locations and patterns that can be observed and described.
  - The Earth's orbit and axis tilt is responsible for the length of days and different types of seasons.

#### 5-6 Grade

##### 1. Earth Structure and Processes

- God created a mature earth and the universe in six natural twenty-four hour days with His almighty power.
- God created the earth as a home for man, and He created other objects in the universe to help man mark the seasons and keep track of time.
- God's creation displays His divine power, wisdom, and love.
- God created natural forces which change the earth's surface.
- The Flood created major changes on the earth.
- Earthquakes, volcanoes, floods, storms, and meteorite impacts can rapidly alter the earth's surface.
- Forces from within the earth including tectonic plate movement slowly change the earth.
- Man had developed theories about the earth's internal structure and the functions of other space objects in the universe.

##### 2. Human interaction with earth systems

- God has given man the responsibility of replenishing the earth through wise use of the natural resources He has given us.
- Sin has led man to misuse, waste, and pollute the resources God has given us.

#### 7-8 Grade

##### 1. Earth Structure and Processes

- Plate tectonics are caused by the energy transfer of the lithosphere, mantle and core.
- Landforms appear to be created through violent destructive and constructive forces such as plate tectonics, erosion, deposition, and weathering.
- Many current theories such as the rock cycle, plate tectonics, and geologic column are observable and in motion today.
- Scientists believe in an ancient Earth based on current, observable conditions, geologic record, and the fossil record.
- Christians believe that God created the world with the appearance of age.

##### 2. Interdependence Within the Earth System

- The sun is the principal external energy source for surface of the Earth.

- God created the atmosphere to protect and preserve life on earth.
  - Patterns of atmospheric movement influence global climate and local weather.
  - The Earth's water circulates throughout the crust, oceans, and atmosphere in what is known as the water cycle.
3. Human Interactions with Earth Systems
- God has given humans a role of managers, meaning we must make responsible decisions in how we alter and affect his natural creation.
4. The Universe
- Gravity is the primary force that holds solar systems and galaxies together.
  - The Earth is part of a solar system including 7 other planets, their moons, and various other bodies in an orbit around the sun.

# Life

## Kindergarten

### 1. Living Systems

- God made all living things diverse with many unique characteristics. By observing and comparing living things, we learn more about them and can more fully appreciate the work and wisdom of God.

### 2. Interdependence among living systems

- By observing a natural system or a smaller model, we can differentiate between living and nonliving components within that system.
- Many pieces work together in order to maintain a natural system.

## 1-2 Grade

### 1. Structure and Function in Living Systems

- There are 6 groups of animals separated by their characteristics and behaviors.
- Plants have (many of the same characteristics) different parts.

### 2. Interdependence Among Living Systems

- Animals need air, food, water, and shelter and have different ways of meeting their needs.
- God created animals and gave them to us to use and take care of.
- Plants use their basic characteristics to meet their basic needs: food, air, and water.
- God created plants for us which can be used for many different purposes.
- Some living things have become extinct because their needs were not met.

### 3. Evolution in Living Systems

- All animals and plants change as they go through a life cycle.
- The life cycles of some animals are very different from the life cycle of people.
- Plants can make new plants. (Plants reproduce in a variety of different ways.)

## 3-4 Grade

### 1. Structure and Function in Living Systems

- All living things have common features.
- Plants and animals have structures that help them survive.
- Plants and animals undergo a life cycle, going through changes as they live and grow.
- Some animals undergo metamorphosis.

### 2. Ecosystems and Habitats

- Living things depend on one another in many ways.
- All animals need food, water, and a place to live.

- Plants and animals compete for the things they need
- Animals and plants adapt to their environment in order to survive.
- Producers and consumers make up the food chain.
- Overlapping food chains result in a food web

### 5-6 Grade

1. Structure and Function of Living Things.
  - God is the source of life and He created mankind and all living creatures with His almighty power, according to their kind or species.
  - God created living creatures to assist mankind and help in His preservation of our environment.
  - God has given living things the physical characteristics and adaptations they need to perform specific functions in their ecosystems.
  - All living things carry on the basic functions of: growth, use of energy, reproduction, interaction with the environment, and getting rid of wastes.
2. Interdependence Among Living Systems
  - God has provided a wide variety of environments, habitats, and ecosystems.
  - God guides the interactions of all living things within their particular environment and ecosystem.
  - Living things depend on each other for survival and to achieve balance in their ecosystem.
3. Human Interactions with Living Things
  - God created man, giving him the intelligence to rule over the living creatures and guide their interactions.
  - Humans should seek ways to preserve, protect, and enrich the environments for all living things.

### 7-8 Grade

1. Structure and Function in Living Systems
  - Tissues, organs and organ systems are composed of cells and function to serve the needs of all cells for food, air and waste removal.
  - Cells make up all living organisms, carrying on the many functions needed to sustain life.
2. Interdependence Among Living Systems
  - Human beings are constantly interacting with other organisms that cause disease.
3. Development of Living Systems
  - All living things reproduce sexually or asexually, passing their traits to the next generation with genes.
  - God has created all living organisms “according to their own kind” with the ability to adapt to their environment.



#### 4. Human Interactions with Living Systems

- The growing field of genetics has allowed humans to make many advances in the quality of life here in a sinful world.
- God has given humans a role of managers, meaning we must make responsible decisions in how we alter and affect his living creation.

### Health

#### 1. Physical Health

- Regular physical activity strengthens body systems and lessens an individual's chances of developing disease.
- Sleep is an integral part of physical wellness, able to affect many aspects of body systems.
- Food should be viewed not only as a delicious blessing from God, but also as the fuel that runs and helps maintain our body.

#### 2. Mental Health

- People need a healthy amount of stress in their lives.
- People that develop "Christ-esteem" will build self-esteem.
- Self-efficacy builds mental health.
- A healthy self-image positively affects confidence and self-esteem.
- The brain must be "fed" just like the body in order to work efficiently and remain healthy throughout our lives.
- Sleep revitalizes and organizes the mind.

#### 3. Social Health

- God has created us social creatures with the need to interact and attach ourselves to others.
- Bullying is a negative, offensive way that individuals to gain control over their social environments.
- God instructs humans to help and serve each other.

#### 4. Spiritual Health

- Our eternal well-being is wrapped up in Jesus.
- Studying God's Word strengthens our spiritual health.