

Oakview Preparatory School

Long Range Plans

Teacher: *Karen Austin*

Curriculum: North American Division of SDA and New York State

Other Resources: videos, hands on interactive experiments, supplemental resource books

Assessments: quizzes, tests, research reports, projects, class participation, cooperative group work, classwork and homework

Grading Policy: homework **10%** classwork **20%** projects **20%** quizzes **5%** tests **40 %** Misc. **5%** late work will have a **5% deduction**

The students will master the following topics with 90% accuracy and score 85% or better on tests and given activities by the end of the stated time period.

adjustments may be made at the teacher's discretion

Science Grade:6 Text: BY Design level 6 Supplement Discover God's Creation

Lab Resources: BFEK- Biology for Every Kid, ESFEK- Earth Science for Every Kid, internet

First Marking Period

September

Lab: which sponge holds the most (internet)

living, nonliving PDF An EGGcellent Experiment (PDF), Lab Safety Sort

Scientific Method

Lab safety procedures

Scientific method review

Project assignment

Objectives

NYSSLS Standard 1: Students will use scientific inquiry to pose questions, seek answers, and develop solutions.

NYSSLS Standard 4: Students will demonstrate the ability to design and carry out investigations using scientific processes.

NYSSLS Standard 6: Students will demonstrate understanding of the interrelationships among science, technology, and society.

3-LS1-1 (Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death)

MS-LS1-3 (Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells)

Chapter 1

An Overview of Life

What themes repeat in biology?

What makes nature complex?

What cycles exist in nature?

Objectives

Energy and Matter (PS3) Potential and Kinetic Energy: Understand potential and kinetic energy, and how energy changes forms and transfers between objects.

Patterns and Systems (LS1) Repetition of Themes: Examine recurring themes in biology, such as adaptation, growth, and the interdependence of organisms within ecosystems.

Structure and Function (LS1.A) Biological Complexity: Understand how the structure of organisms supports their function and contributes to biological complexity.

Ecosystems (LS2) Complex Interactions: Explore how ecosystems are complex systems with many interacting parts, including organisms, populations, and environmental factors.

Biodiversity (LS4) Diversity and Interdependence: Study how biodiversity contributes to the complexity of natural systems and the interdependence of species.

Earth's Systems (ESS2) Natural Cycles: Learn about natural cycles such as the water cycle, carbon cycle, and nitrogen cycle, and how these cycles sustain and affect ecosystems.

Ecosystems and Energy Flow (LS2) Nutrient Cycles: Investigate nutrient cycles within ecosystems, including how matter and energy are recycled through biological and physical processes.

Science and Engineering Practices (PS2) Conducting Investigations: Engage in investigations to explore energy forms, biological themes, complexity, and natural cycles.

Crosscutting Concepts (CCC) Systems and Patterns: Use systems thinking to understand patterns and complexity in nature, and how different cycles interconnect within ecosystems.

October

Chapter 2 How Cells Are Alike and Different

What are cells?

How are cells classified?

What do organelles do?

How do cells get energy?

Objective

Structure and Function (LS1.A) What Are Cells?: Learn about cells as the basic units of life, understanding their role as building blocks for all living organisms.

Cell Theory (LS1.A) Cell Functions: Explore the fundamental concepts of cell theory, including the idea that all living things are composed of cells and that cells are the basic unit of structure and function in organisms.

Structure and Function (LS1.A) Cell Classification: Understand the differences between types of cells, such as prokaryotic (e.g., bacteria) and eukaryotic cells (e.g., plant and animal cells).

Eukaryotic and Prokaryotic Cells (LS1.B) Cell Types: Investigate how cells are classified into different types based on their structures and functions.

Structure and Function (LS1.A) What Do Organelles Do?: Study the functions of various organelles within eukaryotic cells, such as the nucleus, mitochondria, ribosomes, and chloroplasts.

Systems and Functions (LS1.C) Organelles' Roles: Explore how different organelles work together to maintain cell functions and overall health.

Energy and Matter (PS3) How Do Cells Get Energy?: Learn about how cells obtain and use energy, including processes like cellular respiration (in animal cells) and photosynthesis (in plant cells).

Photosynthesis and Cellular Respiration (LS1.C) Energy Processes: Understand how photosynthesis in plant cells and cellular respiration in both plant and animal cells convert energy to support cellular activities.

Science and Engineering Practices (PS2) Conducting Investigations: Engage in activities and experiments to observe and investigate cell structures, organelles, and energy processes.

Crosscutting Concepts (CCC) Systems and Models: Use models to understand and represent the structure and function of cells and how they interact with their environment.

Chapter 3 How Cells Function

What is the function of DNA?

How are proteins made?

How do cells function?

Objectives

Structure and Function (LS1.A) Learn about cells as the basic units of life, understanding their role as building blocks for all living organisms.

Cell Theory (LS1.A) Cell Functions: Explore the fundamental concepts of cell theory, including the idea that all living things are composed of cells and that cells are the basic unit of structure and function in organisms.

Structure and Function (LS1.A) Cell Classification: Understand the differences between types of cells, such as prokaryotic (e.g., bacteria) and eukaryotic cells (e.g., plant and animal cells).

Eukaryotic and Prokaryotic Cells (LS1.B) Cell Types: Investigate how cells are classified into different types based on their structures and functions.

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Photosynthesis and Cellular Respiration (LS1.C)Energy Processes: Understand how photosynthesis in plant cells and cellular respiration in both plant and animal cells convert energy to support cellular activities.

Science and Engineering Practices (PS2)Conducting Investigations: Engage in activities and experiments to observe and investigate cell structures, organelles, and energy processes.

Crosscutting Concepts (CCC)systems and Models: Use models to understand and represent the structure and function of cells and how they interact with their environment.

Structure and Function (LS1.A)DNA's Role: Understand that DNA carries genetic information that directs the development, functioning, and reproduction of living organisms. Though detailed molecular mechanisms might not be covered at this level, students can learn about DNA as the "blueprint" for living organisms.

Structure and Function (LS1.A)How Proteins Are Made: Learn the basics of how proteins are synthesized in cells, including the roles of DNA, RNA, and ribosomes in the process. While detailed steps of transcription and translation may not be covered, students can understand that proteins are essential for various cell functions.

Structure and Function (LS1.A)Cell Functions: Explore how cells carry out essential functions such as growth, energy processing, and reproduction. Study how cells maintain homeostasis and perform specialized functions based on their type (e.g., muscle cells, nerve cells).

Systems and Systems Models (LS1.C)Cellular Processes: Investigate how different organelles and structures within a cell work together to carry out functions necessary for cell survival and function. This includes understanding processes such as nutrient uptake, waste removal, and energy production.

Science and Engineering Practices (PS2)Conducting Investigations: Engage in experiments and activities to observe how cells function, including the role of organelles and how cells interact with their environment.

Crosscutting Concepts (CCC)Systems and Models: Use models and diagrams to represent and understand how cells function and how different parts of a cell contribute to its overall operation.

Second Marking Period

November

Chapter 4 How Your Body Is Organized

What are tissues?

What are your body tissues?

What are your body systems?

What is the integumentary Systems?

What is the nervous system?

What are sense organs and senses?

Objectives :

Key Idea 1: Living things are both similar to and different from each other and from nonliving things.

Performance Indicator 1.2: Describe the functions of structures found in a variety of complex organisms.

Major Understanding 1.2a: All organisms are composed of one or more cells, which are the basic units of structure and function.

Major Understanding 1.2d: Cells are organized into tissues, organs, and organ systems in complex organisms.

Major Understanding 1.2d: Cells in multicellular organisms are specialized to perform specific functions and are grouped into tissues.

Major Understanding 1.2d: Tissues are groups of similar cells that work together to perform a specific function.

Performance Indicator 1.2: Describe the functions of structures found in a variety of complex organisms.

Major Understanding 1.2d: Organ systems are groups of organs that work together to perform complex functions.

Major Understanding 1.2e: The integumentary system is one of the systems of the human body that provides protection, temperature regulation, and sensory reception.

Major Understanding 1.2e: The nervous system controls and coordinates the body's responses to stimuli and regulates the body's activities.

Major Understanding 1.2f: Sense organs detect stimuli from the environment and send messages to the brain through the nervous system.

Chapter 5 Systems Work Together In Your Body 1-2

What do bones do?

What do Muscles do?

Objectives

Major Understanding 1.2e: The skeletal system provides structure, support, and protection to the body, as well as the production of blood cells.

Performance Indicator 1.2: Describe the functions of structures found in a variety of complex organisms.

Major Understanding 1.2f: Bones work together with muscles to enable movement and provide the body with its shape.

Major Understanding 1.2e: The muscular system is responsible for movement, both voluntary (like walking) and involuntary (like the beating of the heart).

Major Understanding 1.2f: Muscles work in pairs to move bones at joints, providing motion to the body.

January

Chapter 5 Contd.

Review for Midterms

Third marking period

February

Labs/ Projects

Labs: fold intestines BFEKp 198,

Chapter 6 Safety and Care of the Body

What do health professionals do?

How can we stay safe?

What to do in an emergency?

Objectives

Key Idea 4: The continuity of life is sustained through reproduction and development.

4.2d: Health professionals play a critical role in maintaining public health, diagnosing and treating illnesses, and providing care and support to individuals.

Key Idea 7: Human decisions and activities have had a profound impact on the physical and living environment.

7.2b: Health professionals contribute to public health by educating the community about health risks and preventive measures.

7.1b: Safety precautions and personal protective equipment (PPE) are essential to prevent injury and illness in various settings, including home, school, and community.

7.2c: Understanding and following safety guidelines, such as those related to fire safety, water safety, and traffic safety, help reduce the risk of accidents and injuries.

7.1c: Knowing basic emergency procedures, such as how to call for help, perform first aid, and evacuate safely, is crucial in responding effectively to emergencies.

7.2d: Schools, communities, and households should have emergency plans in place, and individuals should be familiar with these plans to ensure a quick and safe response during emergencies.

Chapter 11 Properties and Changes of Matter

What are physical properties?

What are physical changes?

What are chemical properties and changes?

What are chemical reactions?

Objectives

Key Idea 3: Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.

Major Understanding 3.1a: Substances have characteristic properties that can be observed and measured, such as density, melting point, boiling point, solubility, and conductivity.

Major Understanding 3.1c: Physical properties can be used to describe and identify substances without changing the substance itself.

Major Understanding 3.2a: Physical changes involve changes in the physical properties of a substance, such as size, shape, or state (e.g., melting, freezing, dissolving), but the substance itself remains the same.

Major Understanding 3.2b: Physical changes are usually reversible, as the substance involved remains chemically unchanged.

Major Understanding 3.1b: Chemical properties describe how a substance interacts with other substances to form new materials with different properties, such as flammability, reactivity, and acidity.

Major Understanding 3.2c: Chemical changes (chemical reactions) result in the formation of new substances with different properties, and these changes are usually not reversible.

Major Understanding 3.2d: Chemical reactions involve the rearrangement of atoms to form new substances, and they are often accompanied by changes in energy, such as the release or absorption of heat.

Major Understanding 3.2e: Indicators of chemical reactions include changes in color, temperature, the formation of a precipitate, or the production of gas.

Chapter 12 Atomic Theory

What are the building blocks of matter?

What is the periodic table of the elements?

Objectives

Key Idea 3: Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.

Major Understanding 3.1a: All matter is composed of atoms, which are the basic building blocks of matter.

Major Understanding 3.1b: Atoms of the same element are all alike, but atoms of different elements are different.

Major Understanding 3.1c: Atoms combine to form molecules, which are the basic units of compounds.

Major Understanding 3.1d: The periodic table of the elements is a tool that organizes elements based on their properties and atomic structure.

Major Understanding 3.1e: The periodic table groups elements with similar properties together, such as metals, nonmetals, and noble gases, and shows the relationships among them.

Major Understanding 3.1f: The position of an element on the periodic table provides information about its reactivity and the types of chemical bonds it can form.

March Lab: try this 3.1(Pangea), caffeine and heart rate internet

Chapter 13 Electricity

What is static electricity?

What is electric current?

What are the types of batteries?

What are electric circuits?

What are electronics?

Objectives

Key Idea 4: Energy exists in many forms, and when these forms change, energy is conserved.

Major Understanding 4.3a: Static electricity is the buildup of electric charge on a surface, which occurs when certain materials are rubbed together.

Major Understanding 4.3b: Static electricity can cause materials to attract or repel each other and may result in a discharge, such as a spark.

Major Understanding 4.3c: Electric current is the flow of electric charge through a conductor, such as a wire.

Major Understanding 4.3d: Electric current is measured in amperes (amps) and is driven by a voltage difference between two points.

Major Understanding 4.3e: Batteries store chemical energy and convert it into electrical energy when connected to a circuit.

Major Understanding 4.3f: There are different types of batteries, such as alkaline, rechargeable, and lithium-ion, each with specific uses and characteristics.

Major Understanding 4.3g: An electric circuit is a complete path through which electric current can flow.

Major Understanding 4.3h: Circuits can be series or parallel, affecting how current flows and how components in the circuit function.

Major Understanding 4.3i: Electronics involve the use of electric circuits to process and control information, often using semiconductors, transistors, and other components.

Major Understanding 4.3j: Electronics are the foundation of modern technology, including computers, smartphones, and other digital devices.

Chapter 14 Electricity and Magnetism are related

What are Magnets?

How are electricity and magnets related?

What is a generator and a motor?

How is electricity used and conserved?

Objectives

Key Idea 4: Energy exists in many forms, and when these forms change, energy is conserved.

Major Understanding 4.3a: Magnets have two poles, north and south, and produce a magnetic field that exerts force on magnetic materials and other magnets.

Major Understanding 4.3b: Magnetic materials, such as iron, nickel, and cobalt, are attracted to magnets, and magnets can attract or repel each other.

Major Understanding 4.3c: Electricity and magnetism are related phenomena; a moving electric current can produce a magnetic field, and a changing magnetic field can induce an electric current.

Major Understanding 4.3d: Electromagnets are created when an electric current flows through a coil of wire wrapped around a core of magnetic material.

Major Understanding 4.3e: A generator converts mechanical energy into electrical energy by rotating a coil of wire within a magnetic field, inducing an electric current.

Major Understanding 4.3f: A motor converts electrical energy into mechanical energy by using an electric current to produce a magnetic field that causes a rotor to turn.

Major Understanding 4.3g: Electricity is used in various applications, from powering homes and businesses to running appliances, lights, and electronic devices.

Major Understanding 4.3h: Conservation of electricity involves reducing unnecessary energy use, improving energy efficiency, and utilizing renewable energy sources to decrease the overall consumption of electricity.

Fourth Marking Period

April

Lab: 4.1, 6.2, cleavage line ESFEK p 40

Chapter 8 Our Dynamic Earth

What is Earth's structure?

How does the crust move?

What causes earthquakes and volcanoes?

Objectives

Key Idea 2: Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.

Major Understanding 2.1a: Earth's structure consists of several layers, including the crust, mantle, outer core, and inner core. Each layer has distinct properties and compositions.

Major Understanding 2.1b: The lithosphere (crust and upper mantle) is rigid and forms the tectonic plates that cover Earth's surface.

Major Understanding 2.1c: The movement of Earth's tectonic plates is driven by convection currents in the mantle. These movements can cause the plates to collide, pull apart, or slide past one another.

Major Understanding 2.1d: Plate tectonics is responsible for the formation of many geological features, such as mountains, ocean trenches, and rift valleys.

Major Understanding 2.1e: Earthquakes are caused by the sudden release of energy as tectonic plates move, particularly at fault lines. The energy release causes vibrations that travel through Earth's crust.

Major Understanding 2.1f: Volcanoes are formed when magma from the mantle reaches the surface, often at plate boundaries or hotspots. The movement of tectonic plates can create conditions that lead to volcanic eruptions.

Chapter 9 Earth's Surface Features Change

What are weathering, erosion, and deposition?

How is soil formed?

How are landforms created?

Objectives

Key Idea 2: Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.

2.1g: Weathering is the process by which rocks and minerals are broken down into smaller particles by physical, chemical, or biological means.

2.1h: Erosion is the movement of weathered materials by agents such as water, wind, ice, or gravity.

2.1i: Deposition is the process by which eroded materials are dropped or settled in a new location, contributing to the formation of various landforms.

2.1j: Soil is formed through the weathering of rock and the decay of organic matter over long periods. It is composed of minerals, organic material, water, and air.

2.1k: The composition and properties of soil can vary depending on the type of parent material, climate, topography, and biological activity in the area.

2.1l: Landforms are created and altered by the processes of weathering, erosion, and deposition. These processes shape features such as mountains, valleys, plains, and deltas.

2.1m: Tectonic activity, such as the movement of Earth's plates, also plays a role in the creation and modification of landforms by uplifting, folding, and faulting Earth's crust.

May

Chapter 6

Review for Finals

June

Final Exams