Each of these learning expectations is what a student is expected to learn by the end of their current year of instruction. These expectations are set to adhere to the Next Gen Science Standards which are grade specific and lead to higher order thinking. The curriculum that develops from these expectations will be developed in accordance with the NJ Model Science Curriculum.

Kindergarten Learning Expectations -- Science

Seeds/Plants

- A source of energy is needed for all organisms to stay alive and grow. Plant life is the basis of life on Earth. Plants need light to grow.
- Seeds germinate and can to grow into the next generation of plants.
- Seeds are adapted to survive dispersal and to wait for needed conditions (temperature, water, light) to germinate
- Plants need to take in water, nutrients, and light from their environment to make needed substances to stay alive.
- Describe the relationship between sunlight and plant growth.
- In habitats/ecosystems, plants are producers.
- Different types of plants grow in different habitats where their need for space, light, water, and nutrients (minerals) can be met.
- Plants provide the world with oxygen.
- Plants provide food, products, medicine and beauty to the world.

Life Cycles of Animals

- Animals have specific requirements to live and grow. These needs must be provided by the habitat.
- Animals have various ways of obtaining food and water.
- Animals are diverse and have different ways to obtain water and food. Habitats are diverse in the type of foods and water available for animal life. Over time, animal traits tend to match the type of habitat in which the animals live and thrive.
- Energy for animals comes from consuming other organisms.
- Animals are classified as herbivores, carnivores, or omnivores based on what type of organisms they consume for energy.
- Features of the life and nature of animal life can be observed in natural settings.

Properties of Matter- Solids, Liquids, and Gases

- Students will explore of changes in states of matter when some substances are cooled or heated.
- Learn to distinguish the properties of matter in the same state, such as salt and pepper or salt and sand.
- Student will examine and study different matter in order to illustrate and/or describe properties.

Properties of Matter-Energy and Motion

- Objects can move in many different ways: fast, slow, straight line, circle and zigzag.
- Experiments will be conducted to investigate and model the various ways that inanimate objects move.
- A force can be a push or a pull. Pushing or pulling can move an object.
- The speed an object moves relates to how strongly it is pushed or pulled.

Weather

- Over a long period of time, student will observe, measure and record weather conditions including temperature, precipitation, cloud cover, and wind.
- Tools used to measure weather will be introduced and possibly constructed. Relate how weather influences the daily life of students.
- Weather influences the behavior of animals and plants.
- New Jersey experience four seasons with distinct weather patterns.

Grade 1 Learning Expectations -- Science

Plants

- A source of energy is needed for all organisms to stay alive and grow. Plant life is the basis of life on Earth. Plants need light to grow.
- Conduct experiments to determine the effects of water, light, soil, and/or temperature on plant growth.
- Identify major parts of plants and their function(s).
- Study how human activity has positive and negative effect on plants in an ecosystem.
- Examine the relationship between the structure of a plant or parts of the plants related to the function of obtaining nutrients for growth and reproduction.
- Describe how plants vary in their appearances and structure to grow and reproduce in their habitats.
- Observe behaviors that plants and animals share and that distinguish plants from animals.

Light and Shadow

- Light is a form of energy that impacts matter.
- Light can be natural and artificial.
- Objects are categorized as opaque, translucent, or transparent in terms of how they transmit light.
- Different objects cast shadows and others that bend or transmit light.
- Prisms separate light into its component colors.
- Investigate through inquiry how shadows change when the properties of light change (distance, brightness, angle)

Matter 2

- Matter takes up space and has mass.
- The structure of materials determines their properties
- Matter has an atomic/molecular structure of matter
- Matter can exist in three states, solid, liquid and gases.

Animals

- Familiar animals have life cycles with specific stages.
- Familiar animals can be observed as they grow and develop. Features such as size, weight, and appearance chart growth and development.
- Animals have roles in ecosystems. Observations of animals in natural setting provide of roles.
- Animals are classified on the basis of similarities/ differences of features.
- There is an enormous variety of animal life on Earth that is found in different geographical areas

Grade 2 Learning Expectations -- Science

Weather and Climate

- Changes in the weather influences daily life.
- Water is essential to life on Earth.
- The climate of an area influences the survival of plants and animals.
- Climate is the common average weather conditions at a particular place over a long period of time (over 30 years). Climate will be related to weather.
- States of matter of water are exhibited in the water cycle.
- Evaporation, condensation, and precipitation will be described in the water cycle.
- Water is a non renewable resource that is cleansed by the water cycle.
- Three types of major clouds are cumulus, stratus, and nimbus. Each type of cloud is associated with a weather pattern and can be used to predict weather.
- Wind is a force that influences weather.

Behavior and Life Cycle of Animals (part II)

- The life cycle of insects illustrate complete metamorphosis and incomplete metamorphosis.
- The diversity of animals relates to the roles of animals in ecosystems. Insects provide examples to study.
- The behavior of insects can be explored through inquiry of different conditions (light/dark, cold/hot, dry/moist).
- Different body parts of animals have different functions. Structure relates to function.
- Science classifies animals by using the evidence of shared traits.
- Animals are grouped together that are more closely related.

Magnetism

- Two magnets can interact with each to demonstrate attraction and repulsion
- Magnetic force act over distance. The strength of the magnetic force changes with changes in distance.
- Magnets have a number of uses in our lives.
- The term magnetism will be described and the property of being magnetic will be used to identify substances.
- Through inquiry students will investigate different magnets and find ways to compare their magnetic forces.

Rocks and Soil

- The rock cycle with be introduced and the three major type of rocks characterized.
- Over time, rocks will be broken down into smaller rocks and even smaller particles.
- Samples of rocks and soils will be examined and categorized.
- The quality of soils varies by color, texture, capacity to retain water, and particle types.
- Soil is composed of rock particles, remains of dead organisms, and living organisms.
- Standard tests, such as hardness and bubbling of carbon dioxide from contact with vinegar, are used to determine rock types.

Grade 3 Learning Expectations -- Science

Astronomy

- Earth operates as a set of complex, dynamic, and interconnected systems, and is a part of the all-encompassing system of the universe.
- Physical characteristics of the planets depend on their distance from the sun and their size.
- Observable, predictable patterns of movement in the sun, Earth, moon system occur because of gravitational interaction and energy from the sun.
- Technology enables us to better understand Earth's systems and the impact of Earth's systems on human activity.

Simple Machines

- It takes energy to change the motion of objects. The energy change is understood in terms of forces. Investigate how and why things move (e.g., slide blocks, balance structures, push structures over, use ramps to explore how far and how fast different objects move or roll).
- Simple machines make work easier.
- Forces cause changes in speed and/or direction of objects.

Oceanography

- Oceans contain complex ecosystems. of oceans regulate and impact the life within, weather patterns and, global climates as we now know them.
- Science is a process that finds answers to questions through observation and experimentation. In the process, more questions arise.
- The oceans cover approximately 71% of the earth's surface and have a great impact on the biosphere.
- Humans can alter the living and nonliving factors within an ecosystem, thereby creating changes to the overall system.

Grade 4 Learning Expectations--Science

Oceans Structure and Communities

- Develop knowledge of environmental issues, including management of natural resources, production and use of energy, waste management and interdependence of marine ecosystems.
- Humans and other organisms use Earth’s resources.
- Earth’s greatest bioproductivity occurs in marine ecosystems.
- Water is essential for all life. Freshwater is unevenly distributed on Earth’s surface. Water distribution is a continuing problem worldwide.

Changing Surfaces of Earth

- Some changes of the Earth's surface are due to slow processes such as erosion and weathering, and some changes are due to rapid changes such as landslides, volcanic eruptions, and earthquakes.
- Fossils provide evidence about the plants and animals that lived long ago and the nature of the environment at that time.
- Moving water, wind, and ice continually shape the Earth's surface by eroding rock and soil in some areas and depositing them in other areas.

Magnetism (Part II)

- All objects and substances in the natural world are composed of matter. Some matter is magnetic.
- Magnetic forces act in a field, vary in strength, and influence the motion of some objects.
- Through experimentation students will construct ways to determine properties and measure the force of magnets.
- Magnetic forces can be harnessed to create electricity.

Electricity

- Electricity is a form of energy that can be transformed by moving electric charges doing work in various devices.
- Electricity is an important part of everyday life.
- Electricity and magnetism are related.

Grade 5 Learning Expectations -- Science

Plants

- Green plants provide the basic food supply for animals because only plants can manufacture food by utilizing the sun's energy.
- Environmental factors create the favorable conditions for certain types of plants to survive and thrive.
- There are all kinds of plants.
- Green plants provide the basis for other forms of life, including humans and animals.

Ecosystems

- Energy flows in an ecosystem through food chains, food webs, and energy pyramids.
- Living things interact, change, and adapt to their environment.
- Ecosystems consist of complex interactions between organisms and the physical environment.

Wetlands

- Watersheds, rivers, wetlands, and the one big ocean of the world are an interconnected system.
- Wetlands perform a number of functions that are critical for sustaining New Jersey's environment.
- Wetlands must be protected.

Weather (II)

- Weather trends can be observed and predicted.
- Weather instruments give us data to use in forecasting the weather.
- The distribution of land and oceans affects climate and weather.
- Climate is the long-term average of a region's weather and depends on many factors, including latitude, elevation, topography, and proximity to large bodies of water and cold or warm ocean currents.
- Weather (in the short run) and climate (in the long run) involve the transfer of energy into and out of the atmosphere.

Environmental Education Trip

The 5th graders at Oxford Street Elementary School learn about the environment through a two-day residency experience at Stokes State Forest. Naturalists and the student's teachers educate the students so that they learn about the environment. This includes but is not limited to:

- the wetlands through a swamp walk
- hiking and gaining knowledge about the geology of Western New Jersey
- they experience of aquatics in pond life by simulating the practices of a scientist.

Teamwork, communication and appropriate socialization are modeled and encouraged. Students also learn safety rules about boating. This is a culminating activity for the year and prepare students to take responsibility as they head into middle school.

Grades 6-8 Science

The 6-8 Science program aligns with the NJCCCS 5.1 for students to understand scientific explanations-core concepts, principles, and value tools and measurements to generate scientific evidence through active investigations, to reflect on science knowledge and to participate productively in science through writings, communications, and critiques.

Each grade has an introductory measurement unit with modifications that emphasize scientific units, scientific notation, accuracy, and precision. The middle school science program addresses the natural world by grade levels. Grade 6 focuses on life science. Grade 7 focuses on the Earth and space system. Grade 8 focuses on physical science. By incorporating engineering projects into the core courses, the science programs studies technology, the design process, and the human-made world.

Grade 6 Learning Expectations

Matter

- Introduction to the atomic structure of matter
- Distinguish elements, compounds, and molecules
- Incorporation of the main chemicals found in life forms.

Cell

- The basic unit of structure and function of life forms is the cell.
- All cells come from preexisting cells.
- Cells with specialized functions will have specialized sub-structure and genetic expression.

Human Body and Health

- Explain how systems of the human body are interrelated and regulate the body's internal environment.
- Recognize that complex multicellular organisms, including humans, are composed of and defined by interactions of the following: , tissues, organs, and systems
- Structure and function of the various body systems

Genetics

- Organisms contain genetic information that influences their traits, and they pass this on to their offspring during reproduction.
- The continuity of life is based on heritable information in the form of DNA.
- Patterns in genetics relate to diploidy/haploidy.
- Study of patterns of traits (autosomal recessive, dominant and blended.

Grade 7 Learning Expectations

Geology

- The variety of substances on Earth results from the way the atoms are arranged and combined.
- Most rocks are formed from preexisting rocks through external and internal geologic processes.
- Minerals are an integral part of everyday life.
- Most geologic activity occurs at the boundaries between plates.
- Volcanoes develop from magma moving upward from deep within the Earth.
- Earthquakes are natural vibrations of the ground, some of which are caused by movements along fractures in Earth's crust.
- Mountains form through dynamic processes which crumple, fold, and create faults in the Earth's crust.
- Scientist use several methods to learn about Earth's geological history.

Weather and Climate

- Most of what occurs in the universe involves some form of energy being transformed into another.
- No matter how substances within a closed system interact the total mass of the system remains the same.
- Changing patterns of weather and climate occur in the Earth's atmosphere.
- Weather and climate impact the natural world.
- Weather and climate impact individuals and societies.

Astronomy

- Organization of the solar system can be used to understand the motion of the stars, sun, moon and planets in the sky.
- The Sun, Earth, and Moon form a dynamic system that influences all life on Earth.
- Motions of the Sun-Earth-Moon system define Earth's day, month and year.
- Using the laws of motion and gravitation astronomers can understand the orbits and properties of the planets and other objects in the solar system.
- The life cycle of every star is determined by its mass, luminosity, magnitude, temperature, and composition.
- Observations of galaxy expansion, cosmic background radiation, and the Big Bang theory describe an expanding universe that is estimated to be 13.7 billion years old.
- The universe is an ever changing place of immense size and spectacular phenomena.
- Humans explore the planets, sun and moons to learn about the history future, and nature of the solar system, its planets and life.

Oceanography

- Studying oceans helps scientists learn about global climate and Earth's history.
- The marine environment is geologically diverse and contains a wealth of natural resources.
- The global ocean consists of one vast body of water that covers more than two-thirds of the Earth's surface.
- Oceans have distinct layers of water masses that are characterized by temperature and salinity
- Waves and currents drive the movements of ocean water and lead to the distribution of heat, salt, and nutrients from one region of the ocean to another.

Grade 8 Learning Expectations

Chemistry

- All substances (things) are made of matter.
- Regardless of how matter interacts with other matter or how atoms are rearranged into molecules in a chemical reaction, mass is always conserved.
- The structure of a substance relates to its properties.
- Based on similarities of structure, matter, such as atoms and molecules have patterns and/or trends of properties and behaviors.
- Chemical energy is energy stored in the arrangement of atoms. atoms are rearranged during chemical reactions, energy is transferred and transformed. and light are common forms of energy that are released during chemical reactions.

Physics

- Forces act on objects and can produce motion.
- Unbalanced forces cause changes in motion that can be predicted and described.
- Forces in fluids are related to pressure and density can affect the motion of objects in the fluid.
- Work is the transfer of energy to an object, and power is the rate at which work is done. Machines are devices that help make work easier.
- Heat is energy that moves from an object at a higher temperature to an object at a lower temperature.
- Waves transfer energy, have describable properties, and interact in predictable ways.

Electricity and Magnetism

- Energy is transformed from one form to another during changes in matter.
- Electricity is a form of energy that can be transformed by moving electric charges doing work in various devices.
- Electricity and magnets are related.