South Brunswick School District

ELEMENTARY SCIENCE

Curriculum Guide for Parents

Date of Last Curriculum Revision: August 2017

District Mission

The South Brunswick School District will prepare students to be lifelong learners, critical thinkers, effective communicators and wise decision makers. This will be accomplished through the use of the Next Generation Science Standards (NGSS) and/or the New Jersey Student Learning Standards (NJSLS) at all grade levels. The schools will maintain an environment that promotes intellectual challenge, creativity, social and emotional growth and the healthy physical development of each student.

~Adopted August 2017

Board Approval of Science Curriculum
August 2017

This curriculum is approved for all regular education programs as specified and for adoption or adaptation by all Special Education Programs in accordance with Board of Education Policy.

Science Acknowledgments

We are appreciative of the leadership provided by our curriculum specialists and the knowledge, skills, work and effort of the teachers who served on our curriculum writing teams. In many cases, our units are "home-grown." While aligning with state and/or national standards, they are designed with the needs of the South Brunswick student population in mind.

Articulation

The Supervisors, Specialists, Curriculum Chairpersons, Technology Staff Developers, Directors and the Assistant Superintendent for Curriculum and Instruction meet for articulation at bi-monthly roundtables and ongoing content meetings throughout the year.

Among the topics of discussion are the following: curriculum review cycle, curriculum mapping, resources (ordering, budgeting, inventory), lesson plans, observation look-fors, professional development, NJ Quality Single Accountability Continuum and academic achievement, placement, acceleration, enrichment, basic skills, instructional support, technology proficienciences and content-specific technologies, formative and summative assessments, and various curriculum tasks.

Science Curriculum Development Teams comprised of teachers at every grade level along with representative special education meet together throughout the year as needed. In a time period of major revision, the teams will meet with greater frequency.

*Science Curriculum Transition

This curriculum guide is intended for the 2017-2018 year only. This consists of two new curriculum units aligned to the New Jersey Student Learning Standards for Science (NJSLS), and one former unit from the science curriculum aligned to the New Jersey Core Curriculum Content Standards (NJCCCS). For the 2018-2019 school year, all curriculum units will be aligned to the NJSLS standards.

The important thing in science is not so much to obtain new facts as to discover new ways of thinking about them.
~William Lawrence Bragg

Table of Contents

For every fact there is infinity of hypotheses.

~Robert M. Pirsig
Zen and the Art of Motorcycle Maintenance

Overview of Science Instruction

Mission Statement

It is the intention of South Brunswick Schools to graduate all of its students with the scientific knowledge, skills and habits of mind needed to be lifelong-learners, critical thinkers, effective communicators and wise decision-makers. Students will develop and use the skills necessary for full participation in a world shaped by science and technology.

Our vision is that all students will…

- Be curious about how the world works.
- Be scientifically honest, willing to reevaluate ideas when new data are presented.
- Respect the world around them and work to protect both the local and global environment.
- Understand that science is not a static body of knowledge but is continually evolving as new information emerges.
- Be able to evaluate scientific ideas from an historical perspective.
- Be adept in the use of electronic technology, choosing the appropriate technology for the problems and tasks with which they are confronted.
- Be able to apply knowledge, skills, and processes from science, math, and technology to solve complex, real-world problems.
- Be tenacious in solving problems.
- Be able to use reason and relevant data to support conclusions and opinions.
- Be able to effectively communicate scientific ideas and information orally, visually, and in writing using a variety of medium.
- Be able to work effectively independently and interdependently to solve problems.

Best Instructional Practices in Science

Effective classroom teachers:

1. Help students develop scientific Habits of Mind.
   An effective science experience will **foster student's natural curiosity** about the world around them, encourage students to **be open to new ideas** and promotes **appropriate skepticism**.

1. Help students to use scientific thinking skills.
   An essential element for a student to be a scientific investigator is knowing how to **find answers to questions.** The skills of scientific inquiry include questioning, hypothesizing, observing, experimenting, measuring, interpreting data, drawing conclusions, and communicating findings.

2. Make science part of everyday life in the classroom.
   Science isn't a subject that just happens once or twice a week. By making materials available, modeling scientific thinking, and responding to events that occur in the environment, **science is part of everyday life.**

3. Provide materials to encourage scientific exploration.
   Include materials that are **interesting to explore** as part of the physical environment to create a setting in which students **spontaneously ask questions and conduct both formal and informal investigations**. Displays can consist of computer programs, videos, filmstrips, books, newspaper articles, and magazines related to particular topics, creations made by children, and objects collected by the teacher or students. A tank of

fish, hermit crabs, turtles, or a frog can be a catalyst for ongoing science discussions and observations.

4. Provide tools for scientific investigations.
   An important part of science is becoming familiar with the **purposeful use of tools** and beginning to recognize the way tools relate to mathematical and scientific thinking. Some tools such as scales, measuring cups, thermometers, calculators, and rulers are for measuring. Other tools such as magnifiers, microscopes, and cameras aid observation.

5. Serve as scientific role models.
   Model scientific thinking by being observant and pointing out specific events when they happen. For example, when water forms on a glass, you might ask, "What do you think is happening here? What's causing the water to form on the glass?" The goal is to encourage children to be curious and consider cause and effect. By inviting students to talk about their experiences or discoveries and encouraging the others to ask questions, teachers help students think like investigators.

6. Select topics for long-term studies in science.
   Students learn best by having time for **extensive exploration** of a few topics during the year. It is a good idea to resist the temptation to touch briefly on many topics. Select topics that allow students to conduct first-hand research and use scientific thinking skills. Because you can only do so much, you will also want to consider which topics provide natural linkages to other subjects you will be studying.

7. Have students work in a variety of settings.
   The **choice of settings** – cooperative groups, pairs of students, individuals, and whole groups- depends on the teacher's objective and the specific content of the lesson. Students should be exposed to each kind of setting throughout the year.

8. Design, develop, implement and evaluate digital-age learning experiences and assessments.
   For example, use of classroom technologies such as interactive whiteboards, projection devices, digital hardware and software.

Program Delivery

Our Science classrooms are effective standards-based environments that foster understanding of big ideas and help students make connections between present, past and future. Below are the varied "Science paths" that students follow during their course of study in South Brunswick.

Elementary School:

- Our Science classrooms are effective standards-based environments that foster understanding of big ideas and help students make connections between present, past and future. Below are the varied "Science paths" that students follow during their course of study in South Brunswick.
- Elementary School:
  - **Kindergarten-** Weather, Forces: Pushes and Pulls, Needs of Living Things
  - **First Grade-** Water**,** Light and Sound, Patterns and Change in the Sky
  - **Second Grade-** Rocks and Soil, Properties of Matter, Characteristics of Living Things
  - **Third Grade-** Water and Weather, Forces and Changes in Motion, Life Cycles

- ➢ **Fourth Grade-** Ecosystems, Structure and Function, Energy Transfer, Waves, and Information
- ➢ **Fifth Grade-** Body Systems, Properties and Changes of Matter, Interactions Between the Earth, Sun, and Moon.

Middle School:

- Sixth Grade- Systems, Astronomy, Phylogenetics, and Geology
- Grades 7 and 8:
  "A" Year: Life Systems, Chemistry, and Meterology
  "B" Year: Physics, Genetics, and Ecology

High School:

- Core Courses (3 years of science required for graduation):
  Physical & Earth Science; Physics I A (Alternative-Active), Physics I T (Traditional-Team based; College Prep), Physics- College H (Honors)
  Chemistry I (Community), Chemistry I (T), Chemistry (H)
  Elements of Biology, Biology I, Biology (H)
- Electives; Astronomy, Science and Society, Biology II, Field Ecology and Animal Behanior, Forensic Science, Human Anatomy and Physiology (H)
- Advanced Placement Courses (with prerequisites): AP Biology, AP Chemistry, AP Environmental Science, AP Physics B, AP Physics C
- Note: The following courses that extend beyond AP are now in the Mathematics Curriculum: Multivariable Calculus, Linear Algebra, Differential Equations, Cimplex Analysis, Analysis

Resources

Kindergarten

Weather-SB District Unit
Basic Needs of Living Things- SB District Unit
Forces: Pushes and Pulls- SB District Unit

First Grade

Water-SB District Unit
Light and Sound- SB District Unit
Patterns and Change in the Sky- SB District Unit

Second Grade

Rocks and Soil- SB District Unit
Properties of Matter-SB District Unit
Characteristics of Living Things- SB District Unit

Third Grade

Water and Weather- SB District Unit
Forces and Changes in Motion-SB District Unit
Life Cycles and Adaptations- SB District Unit

Fourth Grade

Ecosystems- SB District Unit
Structure and Function-SB District Unit
Energy Transfer and Waves-SB District Unit

Fifth Grade

Body Systems- SB District Unit
Properties and Changes of Matter- SB District Unit
Interactions Between the Earth, Sun, and Moon- SB District Unit

Middle School

Sixth Grade

Prentice Hall Science Explorer Textbooks

Phylogenetics- *From Bacteria to Plants*
Astronomy- *Astronomy*
Geology- *Inside Earth*

FOSS Kits-

Systems- Variable, M*odels and Designs*

Seventh-Eighth Grade

Prentice Hall Science Explorer Textbooks

Chemistry- *Chemical Building Blocks and Chemical Interactions*
Life Systems- *Animals and TBD*
Meteorology- *Weather and Climate*
Ecology- *Environmental Science*
Genetics- *Heredity: Cells and Heredity*
Physics- *Motion, Forces and Ener*gy

High School

Physical & Earth Science- *Science Spectrum*, Holt
Physics I (A/T)- *Conceptual Physics,* Addison Wesley
Honors Physics- College Physics, Thomson/Brooks/Cole
AP Physics C: Mechanics- Reese, *University Physics,* Brooks/Cole
Chemistry I (CC)- *Chemistry in the Community*, American Chemical Society
Chemistry I (T)- *Chemistry by Smoot etal*, Glencoe/McGraw Hill
Chemistry I (T)- *Chemistry by Wilbraham etal*, Prentice Hall
Chemistry (H)- *Introductory Chemistry: A foundation by Zumdahl/ Decoste/ Brroks/ Cole,* Cengage Learning
AP Chemistry- *Chemistry Principles and Reactions*, Masterton & Herley
Biology I and II- *The Web of Life*, Addison Wesley
Honors Biology- *The Web of Life*, Addison Wesley
AP Biology- *Biology by Campbell*, Reece, Mitchell, AP edition-10th edition
AP Environmental Science- *Environmental Science – Earth as a Living Planet by Botkin and Keller*
Human Anatomy & Physics- *Hole's Human Anatomy & Physiology 11th edition*
SAMCLA DECA- *Multivariable variable calculus, Stewart Linear Algebra*

Assessment

There are multiple and varied forms of assessment at each grade level. What follows is a list of the key assessment tools used at each level.

Assessments at the Elementary Level

- Teacher made tests, quizzes and projects
- Recording of observations, journal keeping, presentations
- Performance assessments
- End of Unit assessments
- 5th Grade NJASK Science

Assessments at the Middle Level:

- Teacher made tests, quizzes and projects
- Lab reports
- Embedded performance assessments
- End of unit assessments
- 8th Grade NJASK Science

Assessments at the High School Level

- State end-of-course exam: NJ Biology Competency Test (NJBCT)
- Teacher made tests, quizzes and projects
- Labs- written reports (short and long form)
- Mid Term and Final Exams
- AP Exams

Next Generation Standards for Science

The South Brunswick Science Curriculum is aligned to the Next Generation Science Standards. These standards are addressed at every grade level, and are supported by research findings about how students learn science. Our program is inquiry based, and learning is viewed as an active process in which students construct their understanding of the natural world by engaging in "hands-on" and "minds-on" experiences. Technology is embedded where meaningful, and connections to the 21st Century Life and Career Education standards, to the District's core values, and to other areas of curriculum are purposely and explicitly noted.

Framework for K-12 Science Education

The National Research Council (NRC) of the National Academy of Sciences managed the first of two steps in the creation of the Next Generation Science Standards by developing the A Framework for K-12 Science Education, which was released July 2011.

The Framework provides a sound, evidence-based foundation for standards by drawing on current scientific research—including research on the ways students learn science effectively—and identifies the science all K–12 students should know.

The Framework outlines the three dimensions that are needed to provide students a high quality science education. The integration of these three dimensions provides students with a context for the content of science, how science knowledge is acquired and understood, and how the sciences

The curriculum is written in the Understanding by Design format and is based on enduring understandings (broad concepts) with essential questions and both formative and summative assessments.

Complete copies of the standards for science may be found at:
https://www.nextgenscience.org/overview-topics

THE THREE DIMENSIONS OF THE FRAMEWORK

1. Scientific and Engineering Practices

- Asking questions (for science) and defining problems (for engineering)
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations (for science) and designing solutions (for engineering)
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

2. Crosscutting Concepts

- Patterns
- Cause and effect: Mechanism and explanation
- Scale, proportion, and quantity
- Systems and system models
- Energy and matter: Flows, cycles, and conservation
- Structure and function
- Stability and change

3. Disciplinary Core Ideas

Physical Sciences

- PS1: Matter and its interactions
- PS2: Motion and stability: Forces and interactions
- PS3: Energy
- PS4: Waves and their applications in technologies for information transfer

Life Sciences

- LS1: From molecules to organisms: Structures and processes
- LS2: Ecosystems: Interactions, energy, and dynamics
- LS3: Heredity: Inheritance and variation of traits
- LS4: Biological evolution: Unity and diversity

Earth and Space Sciences

- ESS1: Earth's place in the universe
- ESS2: Earth's systems
- ESS3: Earth and human activity

Engineering, Technology, and Applications of Science

- ETS1: Engineering design

- ETS2: Links among engineering, technology, science, and society

The curriculum is written in the Understanding by Design format and is based on enduring understandings (broad concepts) with essential questions and both formative and summative assessments.

SCIENCE

CURRICULUM

Elementary Matrix:
New Jersey Student Learning Standards and Essential Questions

Grade	Standards & Essential Questions by Grade Level
Kindergarten	Kindergarten students study earth, space, life, and physical sciences based on the NGSS K-PS2-1, K-PS2-2, K-LS1-1, K-ESS3-1, K-ESS2-2, K-ESS3-3. ● ***Weather (Earth and Space)*** ~ What is the weather like today and how is it different than yesterday? How can someone predict what the weather will be tomorrow? Aligned to NJCCCS Standards. ● ***Forces: Pushes and Pulls (Physical)*** ~ How can you change the speed or direction of an object? What happens when two objects come together? What happens with a big push or pull? ● ***Needs of Living Things (Life)*** ~ What do plants and animals need to live and grow? What is the relationship between what plants and animals need and where they live? How do living things affect or change their environment?
First Grade	First Grade students study physical and earth & space sciences based on the NGSS 1-PS4-2, 1-PS4-3, 1-PS4-1, 1-PS-4-4, 1-ESS1-1, 1-ESS1-2, K.PS3-1, K-PS3-2 ● ***Water*** (***Physical***) ~ What are the properties of water? How does water change from one form to another? Where is water found? Why is water important? Aligned to NJCCCS Standards. ● ***Light and Sound (Physical)*** ~ What is the relationship between light and what we see around us? What happens to a beam of light when you put different kinds of things in front of it? How do sound and vibration work together? How can light and sound be used to communicate over a distance? ● ***Patterns and Change in the Sky (Earth and Space)*** ~ How can patterns we observe in the sky help us make predictions? What is the relationship between the amount of daylight and the time of year? What are the effects of the sun on earth's surfaces?

Second Grade	Second grade students study physical, earth & space, and life sciences based on the NGSS 2-PS1-1, 2-PS1-2, 2-PS1-4, 2-PS1-3, 2-ESS2-3, 2-ESS2-2, 2-ESS1-1, 2-ESS2-1. ● ***Rocks & Soil (Earth)*** ~What is the Earth made of? What makes up land? What do the rocks and soils around us look like? Why are rocks and minerals important resources? What is a fossil? Aligned to NJCCCS Standards. ● ***Properties of Matter (Physical)*** ~ How can we sort objects into groups that have similar patterns? Can some materials be a solid or a liquid? How do the properties of matter determine their use? How can objects change? Are all changes reversible? ● ***Characteristics of Living Things (Life)*** ~ Why do we see different living things in different habitats? ~How are young plants and animals alike and different from their parents? What types (patterns) of behavior can be observed among parents that help offspring survive? How does the diversity of plants and animals compare among different habitats? Why do some plants rely on animals for reproduction?
Third Grade	Third Grade students study the life, earth and physical sciences based on the NGSS standards 3-PS2-1, 3-PS2-2, 3-PS2-3, 3-PS2-4, 3-LS1-1, 3-LS3-1, 3-LS3-2, 3-LS4-2, 3-LS2-1, 3-LS4-3, 3-LS4-4. ● ***Water & Weather (Physical/Earth)*** ~ How do changes in one part of an Earth's system affect other parts of the system? How are weather patterns observed, recorded, and interpreted? How does a drop of water travel through the water cycle? How does water affect our daily lives? Aligned to NJCCCS Standards. ● ***Forces and Changes in Motion (Physical)*** ~ How do equal and unequal forces on an object affect an object? How can we use observations to predict future motion of an object? What are some cause and effect relationships related to magnets and electricity? ● ***Life Cycles (Life)*** ~ How do organisms live, grow, respond to their environment, and reproduce? How are characteristics of one generation passed to the next? How can individuals of the same species and even siblings have different characteristics? Why do individuals of the same species vary in how they look, function, and behave?

Fourth Grade	Fourth grade students study the life, earth and physical sciences based on the NGSS standards 4-PS3-1, 4-PS3-2, 4-PS3-3, 4-PS3-4, 4-PS4-1, 4-PS4-2, 4-PS-4-3, 4-LS1-2, 4-LS1-1, 1-LS1-1. ● ***Ecosystems (Life)*** ~ How do living things get energy? How do living things depend on each other and on non-living parts of the environment? What happens when part of an ecosystem is altered? Aligned to NJCCCS Standards. ● ***Structure and Function (Life)*** ~ How do internal and external structures of plants and animals help plants survive, grow, and thrive? How do animals receive and process different types of information from their environment? ● ***Waves, Information, and Energy Transfer (Physical)*** ~ What is energy, when is it present, and how does it move? In what ways does energy change when objects collide? How can we use waves to gather and transmit information? How can waves and objects interact? What patterns can be found in waves?
Fifth Grade	Fifth grade students study physical, life, and earth & space sciences based on the NGSS standards 5-PS1-1, 5-PS1-3, 5-PS1-4, 5-PS1-2, 5-ESS1-1, 5-ESS1-2, 5-PS2-1. ● ***Body Systems (Life)*** **~** How does the human body work? What are choices that people can make to help their body and what are choices people can make to hurt their body? Aligned to NJCCCS Standards. ● ***Properties and Changes of Matter (Physical)*** ~ How can properties be used to identify materials? What kind of model can be created to describe matter? Can we create a new substance by mixing two substances? When matter undergoes change, how does this impact the total weight of the matter? ● ***Interactions Between Earth, Sun, and Moon (Earth & Space)*** ~ What patterns do we notice when observing the sky? What effect does Earth's gravitational force have on objects? What effect does the relative distance from Earth have on the apparent brightness of the sun and other stars?

KINDERGARTEN SCIENCE

Content: Kindergarten Science

Course Description or Content Overview:
Kindergarten students study life, Earth & Space, Physical, and Engineering & Technology sciences based on the following standards, enduring understandings, and essential questions.

Next Generation Science Standards (NGSS):

1. Scientific and Engineering Practices
- Asking questions (for science) and defining problems (for engineering)
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations (for science) and designing solutions (for engineering)
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

2. Crosscutting Concepts
- Patterns
- Cause and effect: Mechanism and explanation
- Scale, proportion, and quantity
- Systems and system models
- Energy and matter: Flows, cycles, and conservation
- Structure and function
- Stability and change

3. Disciplinary Core Ideas

Physical Sciences
- PS1: Matter and its interactions
- PS2: Motion and stability: Forces and interactions
- PS3: Energy
- PS4: Waves and their applications in technologies for information transfer

Life Sciences
- LS1: From molecules to organisms: Structures and processes
- LS2: Ecosystems: Interactions, energy, and dynamics
- LS3: Heredity: Inheritance and variation of traits
- LS4: Biological evolution: Unity and diversity

Earth and Space Sciences
- ESS1: Earth's place in the universe

- ESS2: Earth's systems
- ESS3: Earth and human activity

Engineering, Technology, and Applications of Science
- ETS1: Engineering design
- ETS2: Links among engineering, technology, science, and society

Enduring Understandings:

Weather:
- Weather is the combination of sunlight, wind, snow, or rain and temperature in a particular region at a particular time.
- People observe patterns in weather data to make predictions.

Needs of Living Things:
- Living things need water, air, food, and resources from the land.
- Plants and animals live in places that provide for their needs.
- Plants and animals can change their environments.
- Humans can make choices to reduce their impact on the environment.

Forces: Pushes and Pulls:
- Simple tests can be designed to gather evidence to support or refute student ideas about causes.
- Pushes and pulls can have different strengths and directions.
- Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.
- When objects touch or collide, they push on one another and can change motion.
- A bigger push or pull makes things speed up or slow down more quickly.

Essential Questions:

Weather:
- What is the weather like today and how is it different than yesterday?
- How can someone predict what the weather will be tomorrow?

Needs of Living Things:
- What do plants and animals need to live and grow?
- What is the relationship between what plants and animals need and where they live?
- How do living things affect or change their environment?

Forces: Pushes and Pulls:
- How can you plan a simple way to change the speed or direction of an object?
- What happens when two objects come together?
- What happens with a big push or pull?

Terminology:

Weather	Needs of Living Things	Forces: Pushes and Pulls
● Nature ● Weather ● Season ● Environment ● Cycles ● Patterns ● Senses	● Nature ● Weather ● Environment ● Cycles ● Patterns ● Living ● Nonliving ● Observe ● Predict ● Hypothesis ● Magnifying Glass/Lens ● Senses ● Experiment ● Seed ● Plant ● Physical Characteristics ● Texture ● Describe	● Push ● Pull ● Force ● Motion ● Strength ● Speed ● Direction ● Friction ● Gravity ● Distance ● Path ● Position ● Collide ● Detect ● Angle ● Shape ● Height ● Length ● Travel

Assessments:

- Unit specific formative assessments
- Student Observation
- Class Discussion
- Unit Summative Assessment

21st Century Connections:

8.1 Technology: All students will use digital tools to access, manage, evaluate, and synthesize, information in order to solve problems individually and collaboratively and to create and communicate knowledge.

8.2 Technology: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the design world, as they relate to the individual, global society, and the environment.

9.1 Life and Career Skills: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

9.3 Career Awareness, Exploration, and Preparation: All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to

navigate the globally competitive work environment of the information age.

Character Education:
The elementary core values of cooperation, assertion, responsibility, empathy, and self-control are addressed and stressed throughout each unit of study.

Cross Curricular / Interdisciplinary:
Mathematics: Data collection, representation and analysis, problem solving
Language Arts: Journal writing, recording observations, and shared literature
Art: Scientific drawings and model creation

Course Resources:

Technologies:
Interactive websites to accompany units (See unit guides)

Units of Study:

1. Weather
2. Forces: Pushes and Pulls
3. Needs of Living Things

FIRST GRADE SCIENCE

Content: 1ST Grade Science

Course Description or Content Overview:

First Grade students study the life, Earth, and physical sciences based on the following standards, enduring understandings, and essential questions.

Course Description or Content Overview:

First grade students study Earth & Space, Physical, and Engineering & Technology sciences based on the following standards, enduring understandings, and essential questions.

1. Scientific and Engineering Practices

- Asking questions (for science) and defining problems (for engineering)
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations (for science) and designing solutions (for engineering)
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

2. Crosscutting Concepts

- Patterns
- Cause and effect: Mechanism and explanation
- Scale, proportion, and quantity
- Systems and system models
- Energy and matter: Flows, cycles, and conservation
- Structure and function
- Stability and change

3. Disciplinary Core Ideas

Physical Sciences

- PS1: Matter and its interactions
- PS2: Motion and stability: Forces and interactions
- PS3: Energy
- PS4: Waves and their applications in technologies for information transfer

Life Sciences

- LS1: From molecules to organisms: Structures and processes
- LS2: Ecosystems: Interactions, energy, and dynamics
- LS3: Heredity: Inheritance and variation of traits

- LS4: Biological evolution: Unity and diversity

Earth and Space Sciences
- ESS1: Earth's place in the universe
- ESS2: Earth's systems
- ESS3: Earth and human activity

Engineering, Technology, and Applications of Science
- ETS1: Engineering design
- ETS2: Links among engineering, technology, science, and society

Enduring Understandings:

Water:

- Water can have many shapes and forms and can change from one form to another.
- Water comes from several sources and can be used in many ways.

Light and Sound:

- Objects can be seen if light is available to illuminate them or if they give off their own light.
- Some materials allow light to pass through them, others allow only some light through, and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach.
- Sound can make matter vibrate, and vibrating matter can make sound.
- Simple tests can be designed to gather evidence to support or refute student ideas about causes.

Patterns and Change in the Sky:

- Patterns of the sun, moon, and stars in the sky can be predicted using observations.
- Seasonal patterns of sunrise and sunset can be observed and predicted.
- Sunlight warms the Earth's surface.

Essential Questions:

Water:

- What are the properties of water?
- How does water change from one form to another?
- Where is water found?
- Why is water important?

Light and Sound:

- What is the relationship between light and what we see around us?
- What happens to a beam of light when you put different kinds of things in front of it?
- How do sound and vibration work together?

- How can light and sound be used to communicate over a distance?

Patterns and Change in the Sky (Earth and Space):

- How can patterns we observe in the sky help us make predictions?
- What is the relationship between the amount of daylight and the time of year?
- What are the effects of the sun on earth's surfaces?

Terminology:

Water	**Light and Sound**	**Patterns and Change in the Sky**
• Properties • Shape • Expand • Freeze • Ice • Melt • Evaporation • Environment • Conserve • Solid • Liquid	• Light • Sound • Light source • Translucent • Transparent • Opaque • Reflect • Mirror • Illuminate • Illumination • Shadow • Beam • Ray • Path • Sound • Vibrate • Energy • Absorb • Travel • Communicate • Device • Distance • Darkness	• Sun • Moon • Earth • Stars • Pattern • Night • Day • Daylight • Position • Prediction • Patterns • Sundial • Rotate • West • East • Shadows • Sunrise • Sunset • Globe • Absorb • Reflect • Temperature • Thermometer

Assessments:

- Unit specific formative assessments
- Student Observation
- Class Discussion
- Unit Summative Assessment

21st Century Connections:

8.1 Technology: All students will use digital tools to access, manage, evaluate, and synthesize, information in order to solve problems individually and collaboratively and to create and communicate knowledge.

8.2 Technology: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the design world, as they relate to the individual, global society, and the environment.

9.1 Life and Career Skills: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

9.3 Career Awareness, Exploration, and Preparation: All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age.

Character Education:

The elementary core values of cooperation, assertion, responsibility, empathy, and self-control are addressed and stressed throughout each unit of study.

Cross Curricular / Interdisciplinary:

LA- Journal writing, recording observations, and shared literature

Math – Problem solving, data collection, sorting and classifying, measurement.

Art – Scientific drawings and model creation

SS – Communication, Impact Patterns of the Sky on the World

Tech – Viewing and reading online videos and texts

Units of Study:

1. Water
2. Light and Sound
3. Patterns and Change in the Sky

SECOND GRADE SCIENCE

Content: 2ND Grade Science

Course Description or Content Overview:
Second Grade students study life, Earth, and physical sciences based on the following standards, enduring understandings, and essential questions.

New Jersey Student Learning Standards (NJSLS):
Second grade students study the Earth & Space, Physical, and Engineering & Technology sciences based on the following standards, enduring understandings, and essential questions.

1. Scientific and Engineering Practices
- Asking questions (for science) and defining problems (for engineering)
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations (for science) and designing solutions (for engineering)
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

2. Crosscutting Concepts
- Patterns
- Cause and effect: Mechanism and explanation
- Scale, proportion, and quantity
- Systems and system models
- Energy and matter: Flows, cycles, and conservation
- Structure and function
- Stability and change

3. Disciplinary Core Ideas

Physical Sciences
- PS1: Matter and its interactions
- PS2: Motion and stability: Forces and interactions
- PS3: Energy
- PS4: Waves and their applications in technologies for information transfer

Life Sciences
- LS1: From molecules to organisms: Structures and processes
- LS2: Ecosystems: Interactions, energy, and dynamics
- LS3: Heredity: Inheritance and variation of traits

- LS4: Biological evolution: Unity and diversity

Earth and Space Sciences
- ESS1: Earth's place in the universe
- ESS2: Earth's systems
- ESS3: Earth and human activity

Engineering, Technology, and Applications of Science
- ETS1: Engineering design
- ETS2: Links among engineering, technology, science, and society

Enduring Understandings:

Rocks & Soil
- Rocks and soils are found all over the Earth.
- Rocks and soils can be sorted by their properties.
- The Earth forms and changes rocks.
- Rocks are made of minerals and are natural resources.
- Fossils are rocks that contain evidence of ancient life.

Characteristics of Living Things and Habitats
- Most living things need water, food, air, and space to grow and survive.
- Plants and animals have an interdependent relationship.
- Offspring are dependent on their parents for a period of time in their early development.
- Diversity of plants and animals is the result of adaptations that aid survival and developed over time through inheritance of beneficial traits.

Properties of Matter
- Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature.
- Matter can be described and classified by its observable properties.
- Different properties are suited to different purposes.
- Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not.

Essential Questions:

Rocks & Soil:
- What is the Earth made of?
- What do the rocks and soil around us look like?
- Why are rocks and minerals important resources?
- What is a fossil?

Characteristics of Living Things
- Why do we see different living things in different habitats?
- How are young plants and animals alike and different from their parents?
- What types (patterns) of behavior can be observed among parents that help offspring survive?
- How does the diversity of plants and animals compare among different habitats?

- What do plants need to live and grow?
- Why do some plants rely on animals for reproduction?

Properties of Matter

- How can we sort objects into groups that have similar patterns? Can some materials be a solid or a liquid?
- How do the properties of matter determine their use?
- How can objects change?
- Are all changes reversible?

Terminology:

Rocks & Soil	**Characteristics of Living Things and Habitats**	**Properties of Matter**
• Geologist • Man-Made • Natural • Rock • Properties • Texture • Igneous Rock • Lava • Magma • Metamorphic Rock • Sediment • Sedimentary Rock • Granite • Mineral • Hardness • Streak • Luster • Renewable Resource • Nonrenewable Resource • Mine • Fossil • Fossilization • Organism • Sediment • Impression • Crystal • Mineralization • Petrified	• Living • Non-living • Need • Structure • Attribute • Properties • Plants • Water • Grow • Dispersal • Pollination • Pollinator • Pollen • Mimic • Habitat • Organism • Offspring • Characteristic • Trait • Feature • Inherit • Adaptation • Behavior • Survive • Dependent • Diversity	• Property • Matter • Mass • Observe • Classify • Observable properties • Flexibility • Absorbent • Strength • Solid • Liquid • Gas • Temperature • Heating • Cooling • Substance • Material • Changes • Reversed • Reversible change • Irreversible change • Physical change • Rearrange • Structure

Assessments:

- Unit specific formative assessments
- Science Journals
- Science Notebook pages
- Unit summative assessment

21st Century Connections:

8.1 Technology: All students will use digital tools to access, manage, evaluate, and synthesize, information in order to solve problems individually and collaboratively and to create and communicate knowledge.

8.2 Technology: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the design world, as they relate to the individual, global society, and the environment.

9.1 Life and Career Skills: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

9.3 Career Awareness, Exploration, and Preparation: All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age.

Character Education:

The elementary core values of cooperation, assertion, responsibility, empathy, and self-control are addressed and stressed throughout each unit of study.

Cross Curricular / Interdisciplinary:

- Language Arts: Journal writing, recording observations, and shared literature
- Writing: science journals
- Math: through data collection, representation and analysis, problem solving.
- Art: Scientific drawings and model creation

Units of Study:

1. Rocks and Soil
2. Characteristics of Living Things and Habitats
3. Properties of Matter

THIRD GRADE SCIENCE

Content: 3rd Grade Science

Course Description or Content Overview:
Third Grade students study the life, Earth, and physical sciences based on the following standards, enduring understandings, and essential questions.

New Jersey Student Learning Standards (NJSLS):
Third grade students study the Physical, Life, and Engineering & Technology sciences based on the following standards, enduring understandings, and essential questions.

1. Scientific and Engineering Practices
- Asking questions (for science) and defining problems (for engineering)
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations (for science) and designing solutions (for engineering)
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

2. Crosscutting Concepts
- Patterns
- Cause and effect: Mechanism and explanation
- Scale, proportion, and quantity
- Systems and system models
- Energy and matter: Flows, cycles, and conservation
- Structure and function
- Stability and change

3. Disciplinary Core Ideas

Physical Sciences
- PS1: Matter and its interactions
- PS2: Motion and stability: Forces and interactions
- PS3: Energy
- PS4: Waves and their applications in technologies for information transfer

Life Sciences
- LS1: From molecules to organisms: Structures and processes
- LS2: Ecosystems: Interactions, energy, and dynamics
- LS3: Heredity: Inheritance and variation of traits
- LS4: Biological evolution: Unity and diversity

Earth and Space Sciences
- ESS1: Earth's place in the universe
- ESS2: Earth's systems
- ESS3: Earth and human activity

Engineering, Technology, and Applications of Science
- ETS1: Engineering design
- ETS2: Links among engineering, technology, science, and society

Enduring Understandings:

Water & Weather:
- Earth's components form systems. These systems continually interact at different rates of time, affecting the Earth regionally and globally.
- Scientists use multiple tools and scales to observe and record the weather. This information is used to predict weather patterns over time.
- Weather is a vital, renewable resource. It is naturally replaced through the water cycle, but its use needs to be monitored so consumption does not occur faster than replacement.
- The sun causes evaporation of water. The water then condenses and forms different types of clouds. Water falls as precipitation and it gathers as groundwater, lakes, oceans, etc. in the state of collection.

Forces and Changes in Motion:
- Objects in contact exert forces on one another. These have both strength and direction.
- When forces are balanced, there is no change in the motion or position of an object.
- When forces are unbalanced, there is a change in the motion and/or position of the object the forces are acting on.

Life Cycles and Adaptations
- Differences in characteristics among individuals of the same species sometimes provide advantages in survival, finding mates, and reproducing.
- Plants and animals have predictable characteristics at different stages of development. Plants and animals grow and change.
- Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive.
- Offspring acquire a mix of traits from their parents. Different organisms vary in how they look and function because they have different inherited information. The environment also affects the traits that an organism develops.
- Differences in where they grow or in the food they consume may cause organisms that are related to end up looking or behaving differently.

Essential Questions:

Water & Weather:
- How do changes in one part of an Earth system affect other parts of the system?
- How are weather patterns observed, recorded, and interpreted?
- How does a drop of water travel through the water cycle?
- How does weather affect our daily lives?

Forces and Changes in Motion

- How do equal and unequal forces on an object affect an object?
- How can we use observations to predict future motion of an object?
- What are some cause and effect relationships related to magnets and electricity?
- How can I use magnets and/or electricity to design a solution to a problem?

Life Cycles and Adaptations

- How do organisms live, grow, respond to their environment, and reproduce?
- How are characteristics of one generation passed to the next?
- How can individuals of the same species and even siblings have different characteristics?
- Why do individuals of the same species vary in how they look, function, and behave?

Terminology:

Water & Weather	**Forces and Changes in Motion**	**Life Cycles and Adaptations**
• Water • Water Cycle • Water Vapor • Evaporation • Condensation • Precipitation • Renewable Resource • Thermometer • Temperature • Meteorologist • Forecast • Atmosphere • Wind Speed • Cumulus • Stratus • Cirrus • Rain Gauge • Water Conservation	• Push • Pull • Force • Object • Motion • Acceleration • Net force • Balanced force • Unbalanced force • Equal force • Unequal force • Strength • Speed • Direction • Friction • Gravity • Distance • Path • Position • Collide • Detect • Angle • Shape • Height • Length • Travel • Rest • Pattern • Contact • Exert • Magnetic	• Life Cycle • Larvae • Growth • Frass • Plant • Chrysalis • Migrate • Metamorphosis • Animal • Pupae • Milkweed • Seed • Adult • Antennae • Camouflage • Egg • Head • Abdomen • Thorax • Proboscis • Nectar • Transparent • Mexico • Seedling • Deforestation • Mature plant • Defense • Mimicry • Behavioral adaptation

	• Electric	• Physical adaptation • Traits • Organism • Reproduce

Assessments:

- Unit specific formative assessments
- Student data and observations
- Science journals
- Summative Assessments

21st Century Connections:

8.1 Technology: All students will use digital tools to access, manage, evaluate, and synthesize, information in order to solve problems individually and collaboratively and to create and communicate knowledge.

8.2 Technology: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the design world, as they relate to the individual, global society, and the environment.

9.1 Life and Career Skills: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

9.3 Career Awareness, Exploration, and Preparation: All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age.

Character Education:

The elementary core values of cooperation, assertion, responsibility, empathy, and self-control are addressed and stressed throughout each unit of study.

Cross Curricular / Interdisciplinary:

- Math: measurement, classification, estimation, graphing
- Language Arts: journal writing, recording observations, and shared literature
- Social Studies: migration of the Monarch butterfly
- Art: Scientific drawings and model creation

Course Resources:

Technologies:

Information on Butterfly Rearing: http://www.monarchwatch.org
FOSS Online Teacher Resources, “Magnetism and Electricity” module: www.fossweb.com

Units of Study:

1. Water and Weather
2. Forces and Changes in Motion
3. Life Cycles and Adaptations

FOURTH GRADE SCIENCE

Content: 4th Grade Science

Course Description or Content Overview:
Fourth Grade students study the life, Earth, and physical sciences based on the following standards, enduring understandings, and essential questions.

New Jersey Student Learning Standards (NJSLS):
Third grade students study the Physical, Life, and Engineering & Technology sciences based on the following standards, enduring understandings, and essential questions.

1. Scientific and Engineering Practices
- Asking questions (for science) and defining problems (for engineering)
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations (for science) and designing solutions (for engineering)
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

2. Crosscutting Concepts
- Patterns
- Cause and effect: Mechanism and explanation
- Scale, proportion, and quantity
- Systems and system models
- Energy and matter: Flows, cycles, and conservation
- Structure and function
- Stability and change

3. Disciplinary Core Ideas

Physical Sciences
- PS1: Matter and its interactions
- PS2: Motion and stability: Forces and interactions
- PS3: Energy
- PS4: Waves and their applications in technologies for information transfer

Life Sciences
- LS1: From molecules to organisms: Structures and processes
- LS2: Ecosystems: Interactions, energy, and dynamics
- LS3: Heredity: Inheritance and variation of traits
- LS4: Biological evolution: Unity and diversity

Earth and Space Sciences
- ESS1: Earth's place in the universe
- ESS2: Earth's systems
- ESS3: Earth and human activity

Engineering, Technology, and Applications of Science
- ETS1: Engineering design
- ETS2: Links among engineering, technology, science, and society

Enduring Understandings:

Ecosystems:
- The sun is the source of energy on Earth
- In an ecosystem, animals and plants live and interact with each other within their environment.
- Humans can alter an ecosystem in both helpful and harmful ways.
- All parts of an ecosystem are connected. When one part is changed, it affects the rest of the system.

Structure and Function
- A system can be described in terms of its components and their interactions.
- Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.

Waves, Information, and Energy Transfer
- Energy is the ability to do work. Energy is present whenever there is sound, light, or heat.
- Energy can be moved from place to place through sound, light, or electric currents.
- Energy can be transferred in various ways and between objects.
- Energy can be transferred from object to object through collisions
- Light also transfers energy from place to place. (Light transfers energy- light travels in the form of an electromagnetic wave and carries with it heat which is thermal energy).
- Energy can also be transferred from place to place by electric currents; the currents may have been produced to begin with by transforming the energy of motion into electrical energy.

Essential Questions:

Ecosystems:
- The sun is the source of energy on Earth
- In an ecosystem, animals and plants live and interact with each other within their environment.
- Humans can alter an ecosystem in both helpful and harmful ways.
- All parts of an ecosystem are connected. When one part is changed, it affects the rest of the system.

Structure and Function
- How do internal structures of plants and animals help plants survive, grow, and thrive?
- How do external structures of plants and animals help plants survive, grow, and thrive?

- How do animals use their senses to survive, grow, and thrive?

Waves, Information, and Energy Transfer

- What is energy, when is it present, and how does it move?
- In what ways does energy change when objects collide?
- How can we use waves to gather and transmit information?
- How can waves and objects interact?
- What patterns can be found in waves?

Ecosystems	Structure and Function	Waves, Information, and Energy Transfer
• Carnivore • Community • Consumer • Decomposer • Producer • Ecosystem • Food Chain • Food Web • Habitat • Herbivore • Omnivore • Population • Predator • Prey • Scavenger • Biotic • Abiotic • Adaptation	• Internal • External • Structure • Survive • Thrive • Growth • Behavior • Reproduction • Senses • Mimic • Function • Body system • Antennae • Behavior • Bristles • Carapace • Crustaceans • Elodea • Habitat • Pincers • Structures • Swimmerets • Territory • Tail flap	• Wave • Motion • Amplitude • Wavelength • Reflection • Transmit • Transfer • Energy • Electrical Energy • Decode • Patterns • Converted • Thermal • Heat • Absorb • Reflection • Potential energy • Kinetic energy • Stored Energy • Elastic Energy • D-Cell • Bulb • Negative • Positive • Circuit • Momentum • Inertia • Gravity • Catapult

21st Century Connections:

8.1 Technology: All students will use digital tools to access, manage, evaluate, and synthesize, information in order to solve problems individually and collaboratively and to create and communicate knowledge.

8.2 Technology: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the design world, as they relate to the individual, global society, and the environment.

9.1 Life and Career Skills: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

9.3 Career Awareness, Exploration, and Preparation: All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age.

Character Education:
The elementary core values of cooperation, assertion, responsibility, empathy, and self-control are addressed and stressed throughout each unit of study.

Units of Study:

1. Ecosystems
2. Structure and Function
3. Waves, Information, and Energy Transfer

FIFTH GRADE SCIENCE

Content: 5TH Grade Science

Course Description or Content Overview:
Fifth Grade students study the life, Earth, and physical sciences based on the following standards, enduring understandings, and essential questions.

New Jersey Student Learning Standards (NJSLS):

1. Scientific and Engineering Practices
- Asking questions (for science) and defining problems (for engineering)
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations (for science) and designing solutions (for engineering)
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

2. Crosscutting Concepts
- Patterns
- Cause and effect: Mechanism and explanation
- Scale, proportion, and quantity
- Systems and system models
- Energy and matter: Flows, cycles, and conservation
- Structure and function
- Stability and change

3. Disciplinary Core Ideas

Physical Sciences
- PS1: Matter and its interactions
- PS2: Motion and stability: Forces and interactions
- PS3: Energy
- PS4: Waves and their applications in technologies for information transfer

Life Sciences
- LS1: From molecules to organisms: Structures and processes
- LS2: Ecosystems: Interactions, energy, and dynamics
- LS3: Heredity: Inheritance and variation of traits
- LS4: Biological evolution: Unity and diversity

Earth and Space Sciences
- ESS1: Earth's place in the universe

- ESS2: Earth's systems
- ESS3: Earth and human activity

Engineering, Technology, and Applications of Science
- ETS1: Engineering design
- ETS2: Links among engineering, technology, science, and society

Enduring Understandings:

Body Systems
- How does the human body work?
- What are choices that people can make to help their body and what are choices people can make to hurt their body?

Properties of Matter:
- Physical properties can be used to describe matter, including, color, hardness, reflectivity, electrical conductivity, thermal conductivity, and response to magnetic forces and solubility.
- When two substances are mixed, a chemical change can take place which results in a new substance.
- Matter is made up of particles too small to be seen.
- Regardless of the type of change that matter undergoes, the total weight of matter is conserved.

Interactions Between the Earth, Sun, and Moon
- The Sun is our closest star, and is the central and largest body in our solar system.
- Regular and predictable patterns of motion of Earth and the moon, relative to the sun, can be described as a result of the force of gravity. These movements are responsible for the natural phenomena that occur on our planet (e.g. day, night, shadows, moon phases, seasons, etc.).

Essential Questions:

Body Systems
- The human body is a collection of systems that work together to allow the body to function and maintain health.
- Each body system has components, which may be shared with other systems.
- People can make conscious choices to keep the human body healthy or unhealthy.

Properties and Changes of Matter:
- How can properties be used to identify materials?
- What kind of model can be created to describe matter?
- Can we create a new substance by mixing two substances?
- When matter undergoes change, how does this impact the total weight of the matter?

Interactions Between the Earth, Sun, and Moon
- What patterns do we notice when observing the sky?
- What effect does Earth's gravitational force have on objects?
- What effect does the relative distance from Earth have on the apparent brightness of the sun and other stars?

Terminology:

Body Systems	Properties and Changes of Matter	Interactions Between the Earth, Sun, and Moon
• System • Skeletal • Muscular • Circulatory • Nervous • Digestive • Respiratory • Wellness • Disease • Prescription • Abuse • Misuse • Substance	• Matter • Mass • Weight • Substance • Physical Change • Chemical Change • Conservation • Solid • Liquid • Gas • Particles • Properties • Observe • Measure • Identify • Materials • Model • Mixture • Hardness • Reflectivity • Electrical conductivity • Magnetic forces • Solubility • Time • Temperature • Volume	• Earth • Sun • Moon • Gravity • Gravitational Force • Force • Planet • Moon Phases • Cardinal Directions • Compass • Day • Night • East • West • North • South • Predictable • Season • Shadow • Sun • Constellation • Earth • Gravity • Stars • Moon Phase • Waxing • Waning • Crescent • Gibbous • First Quarter • Third Quarter • Lunar • Gnoman • Cycle • Satellite • New Moon • Full Moon • Astronomer • Rotate • Revolve • Telescope • Magnify

Assessments:

- Unit specific formative assessments
- Lab sheets, lab assessments
- Student notebook
- Unit tests

21st Century Connections:

8.1 Technology: All students will use digital tools to access, manage, evaluate, and synthesize, information in order to solve problems individually and collaboratively and to create and communicate knowledge.

8.2 Technology: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the design world, as they relate to the individual, global society, and the environment.

9.1 Life and Career Skills: All students will demonstrate the creative, critical thinking, collaboration and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

9.3 Career Awareness, Exploration, and Preparation: All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age.

Character Education:

The elementary core values of cooperation, assertion, responsibility, empathy, and self-control are addressed and stressed throughout each unit of study.

Cross Curricular / Interdisciplinary:

- Math – measurement (line graphs)
- Language Arts- Journal writing, recording observations, and shared literature
- Art – Scientific drawings and model creation
- SS-Ancient history of the constellations

Course Resources:

Technologies: Interactive websites – see unit plans

Units of Study:

1. Body Systems
2. Properties and Changes of Matter
3. Interactions Between the Earth, Sun, and Moon