



VOORHEES TOWNSHIP
PUBLIC SCHOOLS

VOORHEES, NEW JERSEY 08043

SCIENCE

CURRICULUM GUIDE

Kindergarten through Fifth Grade
Aligned to Next Generation Science Standards

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VOORHEES TOWNSHIP PUBLIC SCHOOLS

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VOORHEES TOWNSHIP SCHOOLS
SCIENCE CURRICULUM PHILOSOPHY

The purpose of this curriculum is to provide the science teaching staff with direction and guidance in the teaching of science, as well as correlate the curriculum objectives with the [Next Generation Science Standards](#).

The district curriculum spirals content from the Life, Earth, and the Physical Science fields at every grade level. The principle is held that these sciences are interrelated with technology, engineering, and mathematics (STEM), and that the knowledge and application of one is dependent on the others. Moreover, science is an inter-disciplinary field that affects all aspects of the environment.

Each staff member uses an overview of the curriculum to insure cognitive development, sequence, continuity, and a holistic understanding for the learner. The planning and implementation of science classes utilize an appropriate variety of strategies and media to carry out the objectives in this curriculum. Provisions are made for hands-on experiments, computer programs, and outdoor activities and these are encouraged.

The expected outcome is that students will possess a strong sense of science principles, see their relevance to everyday life, and will thrive, with confidence and success, in the high-tech environment of the twenty-first century.

SCIENCE CURRICULUM GOALS

The science curriculum is designed to nurture and foster these goals:

- Provide a curriculum that links instruction to other content areas and real life experiences.
- Utilize numerous resources and technology to provide a variety of learning experiences.
- Actively engage students in developing relevant process skills, critical thinking, and decision making to effect problem solving.
- Promote science literacy as a functional survival skill, recognizing that altering the environment can bring about negative consequences.
- Encourage learners to take an active role in learning and applying science concepts.
- Stimulate an interest in science and technology and their impact on society.

BENCHMARK ASSESSMENTS & EVALUATION

The successful attainment of the objectives listed in this guide by students shall be assessed in the following manner:

1. Teacher observation
2. Teacher constructed tests, projects, and activities
3. District approved standardized tests
4. New Jersey State Assessments
5. Grade level benchmark tests (On file in each school and Admin. Building)
6. Completion of technology-infused science project

CURRICULUM ADAPTABILITY & MODIFICATIONS

This course of instruction shall be modified for academic enrichment, Special Education, ESL, Bilingual, and Basic Skills students through varying techniques, strategies, materials, etc. to meet the needs of all students. These strategies and techniques will include, but not be limited to the following:

- Instructional modification based on IEP's, ISIP's, 504 Plans, etc.
- Providing extra time for assignments, projects, tests, and quizzes
- Segmenting assignments into smaller sections to work on in short time periods
- Provide breaks between assignments so students can refocus on tasks
- Carry out every day routines consistently
- Develop a reward system for good behavior, completing work on time and class participation
- Use visual and auditory reminders from one activity to the next
- Extend the breadth and depth of the content
- Designing lesson plans that can be modified to fit each student

- Rewriting assignments, tests, and quizzes at different learning levels
- Develop a system for easy and comprehensive data collection to help monitor lessons and inform practice
- Provide opportunities for cooperative learning
- Created differentiated learning centers focused on remediation and enrichment
- Provide small group instruction

DISTRICT APPROVED SCIENCE PROGRAM/TEXTBOOKS AND MATERIALS

- MacMillan/McGraw-Hill Science; 2005 (K-5)
- Numerous internet sites, references, digital media, Discovery Education Streaming Plus
- iTunesU

INTERDISCIPLINARY CONNECTIONS/21ST CENTURY LEARNING

Interdisciplinary connections and 21st century learning themes and skills are embedded throughout all content area curriculum guides. Through their daily instruction, teachers relate each content area to other areas so that students experience interdisciplinary relationships and apply them to their learning. Content connections are created among traditionally discrete disciplines such as mathematics, the sciences, social studies/history, English language arts., health and physical education, world language and the related arts. In addition, to encourage 21st century learning, the district instructional focus is on four critical areas: creativity/imagination; critical thinking; problem solving; and communication/collaboration, all of which are essential to prepare students for the future. The district ardently promotes the use of technology, by both students and teachers, to effectively put into practice the aforementioned instructional methods.

The New Jersey Student Learning Standards/Common Core State Standards provide a consistent, clear understanding of what students are expected to learn, so teachers and parents know what they need to do to help them. The standards are designed to be robust and relevant to the real world, reflecting the knowledge and

skills that our young people need for success in college and careers. Interdisciplinary learning enables teachers and students to make connections in their education through exploring clear and relevant links across the curriculum. The Voorhees Township School District curricula provide students opportunities to make connections across all curriculum areas. This allows students opportunities for deepening learning by answering big questions, exploring issues, solving problems or completing final projects. Learning beyond subject boundaries provides students with the opportunity to experience deep, challenging and relevant content.

CCSS Home Page: <http://www.corestandards.org>

New Jersey Student Learning Standards Home Page:

<https://www.nj.gov/education/cccs/>

Voorhees Township School District Curriculum/Program Guides:

Literacy:

<https://www.voorhees.k12.nj.us/site/handlers/filedownload.ashx?moduleinstanceid=41032&dataid=41799&FileName=LAL%20Curriculum%202017.pdf>

Math:

<https://www.voorhees.k12.nj.us/site/handlers/filedownload.ashx?moduleinstanceid=41032&dataid=41795&FileName=VTSD%20Math%20Guide%20K8%20Final%209%202017.pdf>

Science K-5:

<https://www.voorhees.k12.nj.us/site/handlers/filedownload.ashx?moduleinstanceid=41032&dataid=81381&FileName=VTSD%20Science%20Guide%20K-5%20Final%209%202017.docx.pdf>

Science 6-8:

<https://www.voorhees.k12.nj.us/site/handlers/filedownload.ashx?moduleinstanceid=41032&dataid=86215&FileName=VTSD%20Science%20Guide%206-8%20Final%209-2015.pdf>

Social Studies:

<https://www.voorhees.k12.nj.us/site/handlers/filedownload.ashx?moduleinstanceid=41032&dataid=41792&FileName=VTSD%20SS%20Guide%20Final%209-2017.pdf>

Educational Technology Plan:

<https://www.voorhees.k12.nj.us/site/handlers/filedownload.ashx?moduleinstanceid=41032&dataid=41787&FileName=Voorhees%20EdTech%20Plan%202016-19.pdf>

21st Century Life and Career Guide:

<https://www.voorhees.k12.nj.us/site/handlers/filedownload.ashx?moduleinstanceid=41032&dataid=41794&FileName=VTSD%2021st%20Century%20Life%20and%20Careers%20Final%205-2015.pdf>

Specific connections to other content disciplines, skills, and thinking processes are found within the Evidence Statements.

Voorhees Township Public Schools
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SCIENCE PACING GUIDE

MP 1 September - Mid-November	MP 2 Mid-November - End January
MP 3 February - Early April	MP 4 Early April - Mid-June

Kindergarten

Marking Period	Unit/Chapter	NGSS
1	Unit A Plants	K-LS1 From Molecules to Organisms: Structures and Processes K-ESS3 Earth and Human Activity K-2-ETS1 Engineering Design
1	Unit B Animals	K-LS1 From Molecules to Organisms: Structures and Processes K-ESS3 Earth and Human Activity K-2-ETS1 Engineering Design
2	Unit C Our Earth, Our Home	K-ESS3 Earth and Human Activity K-2-ETS1 Engineering Design
3	Unit D Weather	K-PS3 Energy K-ESS2 Earth's Systems K-2-ETS1 Engineering Design
4	Unit F Moving Right Along	K-PS2 Motion and Stability: Forces and Interactions K-2-ETS1 Engineering Design

**Voorhees Township Public Schools
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**SCIENCE PACING GUIDE
GRADE 1**

Marking Period	Unit/Chapter	NGSS
1	Unit C - Sky and Weather Chapter 5 - Sky	1-ESS1 Earth's Place in the Universe K-2-ETS1 Engineering Design
2	Unit C - Sky and Weather Chapter 6 - Weather & Seasons	1-ESS1 Earth's Place in the Universe K-2-ETS1 Engineering Design
2	Unit A - Plants are Living Things Chapter 1 - Living Things	1-LS1 From Molecules to Organisms: Structures and Processes K-2-ETS1 Engineering Design
3	Unit A - Plants are Living Things Chapter 2 - Plants	1-LS1 From Molecules to Organisms: Structures and Processes K-2-ETS1 Engineering Design
3	Unit B - Animals are Living Things Chapter 3 - Animals	1-LS1 From Molecules to Organisms: Structures and Processes 1-LS3 Heredity: Inheritance and Variation of Traits K-2-ETS1 Engineering Design
4	Unit E - Matter Chapter 12 - Magnets and Sound *Lesson 7 and 8 Only	1-PS4 Waves and their Applications in Technologies for Information Transfer K-2-ETS1 Engineering Design

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**SCIENCE PACING GUIDE
 GRADE 2**

Marking Period	Unit/Chapter	NGSS
1	Unit E Matter and Energy Chapter 9 Matter	2-PS1 Matter and Its Interaction K-2-ETS1 Engineering Design
2	Unit A Plants and Animals Chapter 1 Plants	2-LS Ecosystems: Interactions, Energy, and Dynamics K-2-ETS1 Engineering Design
3	Unit A Plants and Animals Chapter 2 Animals	2-LS4 Biological Evolution: Unity and Diversity K-2-ETS1 Engineering Design
3	Unit B Homes for Plants and Animals Chapter 3 Land Habitats Chapter 4 Water Habits	2-LS4 Biological Evolution: Unity and Diversity K-2-ETS1 Engineering Design
4	Unit C Changes on Earth Chapter 5 Weather and Earth Changes Chapter 6 Earth Yesterday and Today	2-ESS1 Earth's Place in the Universe K-2-ETS1 Engineering Design, 2-ESS2 Earth's Systems

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SCIENCE PACING GUIDE
GRADE 3

Marking Period	Unit	NGSS
1-2	Unit A: Looking at Plants and Animals	3-LS1 From Molecules to Organisms: Structures and Processes 3-LS2 Ecosystems: Interactions, Energy, and Dynamics 3-LS3 Heredity: Inheritance and Variation of Traits 3-5-ETS1 Engineering Design
3	Unit C: Our Earth	3-LS4 Biological Evolution: Unity and Diversity 3-ESS2 Earth's Systems 3-ESS3 Earth and Human Activity 3-5-ETS1 Engineering Design
4	Unit E: Forces and Motion	3-PS2 Motion and Stability: Forces and Interactions 3-5-ETS1 Engineering Design

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SCIENCE PACING GUIDE
GRADE 4

Marking Period	Unit/Chapter	NGSS
1	Chapter 6 - Earth's Surface and Interior	4-ESS1 Earth's Place in The Universe 4-ESS2 Earth's Systems 4-ESS3 Earth and Human Activity 3-5ETS1 Engineering Design
2-3	Chapter 12 - Forms of Energy	4-PS3 Energy 4-PS4 Waves and Their Applications in Technologies for Information Transfer 3-5ETS1 Engineering Design
3	Chapter 3 - Describing Animals	4-LS1 From Molecules to Organisms: Structures and Processes 3-5ETS1 Engineering Design
4	Chapter 4 - Life Processes	4-LS1 From Molecules to Organisms: Structures and Processes 3-5ETS1 Engineering Design

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**SCIENCE PACING GUIDE
GRADE 5**

Marking Period	Unit/Chapter	NGSS
1	E-Properties of Matter and Energy Chapter 12 Properties and Structure of Matter Chapter 13 Forms of Matter and Energy	5-PS1 Matter and Its Interactions 5-PS3 Energy 3-5-ETS1 Engineering Design
2	A-Characteristics of Living Things Chapter 1 Classifying Living Things Chapter 2 Plant Structure and Functions Chapter 3 Plant Diversity	5-LS1 From Molecules to Organisms: Structures and Processes 5-LS2 Ecosystems: Interactions, Energy, and Dynamics 5-PS3 Energy 3-5-ETS1 Engineering Design
3	B-Living Things and Their Environments Chapter 5 Interactions of Living Things Chapter 6 Ecosystems	5-LS2 Ecosystems: Interactions, Energy, and Dynamics 5-ESS3 Earth and Human Activity 3-5-ETS1 Engineering Design
4	D-Astronomy, Weather, and Climate Chapter 9 Astronomy Chapter 10 Weather Chapter 11 Weather Patterns and Climate	5-ESS1 Earth's Place in the Universe 5-ESS2 Earth's Systems 5-PS2 Motion and Stability: Forces and Interactions 3-5-ETS1 Engineering Design

Kindergarten - 5th Grade Next Generation Science Standards

KINDERGARTEN	FIRST GRADE	SECOND GRADE
K-PS2 Motion and Stability: Forces and Interactions	1-PS4 Waves and Their Applications in Technologies for Information Transfer	2-PS1 Matter and Its Interactions
K-PS3 Energy	1-LS1 From Molecules to Organisms: Structures and Processes	2-LS2 Ecosystems: Interactions, Energy, and Dynamics
K-LS1 From Molecules to Organisms: Structures and Processes	1-LS3 Heredity: Inheritance and Variation of Traits	2-LS4 Biological Evolution: Unity and Diversity
K-ESS2 Earth's Systems	1-ESS1 Earth's Place in the Universe	2-ESS1 Earth's Place in the Universe
K-ESS3 Earth and Human Activity	K-2-ETS1 Engineering Design	2-ESS2 Earth's Systems
K-2-ETS1 Engineering Design		K-2-ETS1 Engineering Design
THIRD GRADE	FOURTH GRADE	FIFTH GRADE
3-PS2 Motion and Stability: Forces and Interactions	4-PS3 Energy	5-PS1 Matter and Its Interactions
3-LS1 From Molecules to Organisms: Structures and Processes	4-PS4 Waves and Their Applications in Technologies for Information Transfer	5-PS2 Motion and Stability: Forces and Interactions
3-LS2 Ecosystems: Interactions, Energy, and Dynamics	4-LS1 From Molecules to Organisms: Structures and Processes	5-PS3 Energy
3-LS3 Heredity: Inheritance and Variation of Traits	4-ESS1 Earth's Place in the Universe	5-LS1 From Molecules to Organisms: Structures and Processes
3-LS4 Biological Evolution: Unity and Diversity	4-ESS2 Earth's Systems	5-LS2 Ecosystems: Interactions, Energy, and Dynamics
3-ESS2 Earth's Systems	4-ESS3 Earth and Human Activity	5-ESS1 Earth's Place in the Universe
3-ESS3 Earth and Human Activity	3-5-ETS1 Engineering Design	5-ESS2 Earth's Systems
3-5-ETS1 Engineering Design		5-ESS3 Earth and Human Activity
		3-5-ETS1 Engineering Design

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Kindergarten Science Objectives

Unit A - Plants

Next Generation Science Standard:

K-LS1 From Molecules to Organisms: Structures and Processes

K-ESS3 Earth and Human Activity

K-2-ETS1 Engineering Design

1. Understand how plant parts help the plant get what it needs to grow and mature
2. Recognize that a plant needs air, water, light, and soil to survive
3. Recognize that a plant's seeds are found in its fruit, and that the same type of plant will grow from the seed
4. Recognize that plants can be identified by their parts
5. Identify and explore plants that we eat and the foods that come from different plants

Unit B - Animals

Next Generation Science Standard:

K-LS1 From Molecules to Organisms: Structures and Processes

K-ESS3 Earth and Human Activity

K-2-ETS1 Engineering Design

1. Understand the basic definition of an animal and explore animals in your neighborhood
2. Learn about bugs, their attributes, and where they live
3. Understand the basic definition of a reptile, its attributes, and where it lives
4. Understand what animals need in order to survive
5. Learn about birds, fish, and other water animals
6. Explore how animals have adapted to their environments
7. Understand how animals grow and change as they mature
8. Explore relationships between people and animals

Unit C - Our Earth, Our Home

Next Generation Science Standard:

K-ESS3 Earth and Human Activity

K-2-ETS1 Engineering Design

1. Explore the composition and uses of soil
2. Investigate the characteristics of different rocks
3. Learn characteristics of geographic features that are high and low
4. Learn Characteristics of rivers, streams, lakes, and oceans and identify water as a natural resource
5. Learn different reasons for and ways of recycling

Unit D - Weather

Next Generation Science Standard:

K-PS3 Energy

K-ESS2 Earth's Systems

K-2-ETS1 Engineering Design

1. Recognize the characteristics of different kinds of weather such as wind, sun, rain, and snow
2. Recognize and describe different types of clouds
3. Identify what occurs in nature and what people do in different seasons
4. Recognize that the Sun creates shadows and appears to move through the sky
5. Recognize elements in the night sky, such as the Moon and stars, and understand that the night sky changes

Unit F - Moving Right Along

Next Generation Science Standard:

K-PS2 Motion and Stability: Forces and Interactions

K-2-ETS1 Engineering Design

1. Recognize that wheels affect speed and motion and make moving easier
2. Explore ways objects move and forces that cause movement
3. Describe sounds and understand how they are made
4. Recognize that magnets can be used to make some objects move without being touched

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First Grade Science Objectives

Chapter 1 - Living Things

Next Generation Science Standard:

1-LS1 From Molecules to Organisms: Structures and Processes

K-2-ETS1 Engineering Design

1. Identify the five senses and communicate how they are used
2. Explore living and nonliving things by comparing
3. Recognize the characteristics of living and nonliving things

Chapter 2 - Plants

Next Generation Science Standard:

1-LS1 From Molecules to Organisms: Structures and Processes

K-2-ETS1 Engineering Design

1. Explore through observation what happens when plants do not get water
2. Recognize that plants are able to grow in a variety of places as long as their needs are met
3. Explore comparing differences and similarities among seed plants
4. Identify the parts common to most seed plants
5. Explore and communicate about the roots of a plant
6. Explain the structure and function of roots
7. Explore the function of stems through inference
8. Explain the structure and function of stems and leaves
9. Explore through comparison that there is a variety among seeds
10. Explain the structure and function of seeds and fruits
11. Explore and predict the need for water in germinating seeds
12. Explain the growth process of plants
13. Recognize that flowering plants and conifers make seeds

Chapter 3 - Animals

Next Generation Science Standard:

1-LS1 From Molecules to Organisms: Structures and Processes

1-LS3 Heredity: Inheritance and Variation of Traits

K-2-ETS1 Engineering Design

1. Explore through inference why birds are living things
2. Describe ways animals are alike and different
3. Explore and communicate how pets are alike
4. Identify characteristics of mammals
5. Explore differences in animals through classifying
6. Distinguish between and identify characteristics of birds, fish, amphibians, reptiles, and insects
7. Explore growth changes between young animals and adult animals by comparing
8. Compare growth differences and similarities among animals

Chapter 5 - Sky

Next Generation Science Standard:

1-ESS1 Earth's Place in the Universe

K-2-ETS1 Engineering Design

1. Explore and predict warm places using a thermometer
2. Recognize that the Sun provides Earth with light and heat
3. Recognize the pattern of the Sun's position in the sky
4. Explain why we have day and night
5. Explore and observe objects in the dark
6. Recognize that the Moon gets its light from the Sun
7. Explain that groups of stars form constellations
8. Explore by modeling how the Earth moves around the Sun
9. Discuss likenesses and differences among the planets

Chapter 6 - Weather and Seasons

Next Generation Science Standard:

1-ESS1 Earth's Place in the Universe

K-2-ETS1 Engineering Design

1. Explore wind and observe that it can move things
2. Define weather
3. Understand how rain and snow form
4. Explore and communicate daily weather changes through the use of a chart
5. Describe some daily weather changes, including weather changes that are harmful to living things
6. Identify tools used to measure weather
7. Explore and communicate seasonal weather changes through the year
8. Discuss weather and light conditions in spring and summer
9. Discuss the activities and life processes of living in spring and summer

10. Explore through observation how to keep cold away from your skin
11. Discuss weather and light conditions in fall and winter
12. Discuss the activities and life processes of living things in fall and winter

Chapter 12 - Magnets and Sound

Next Generation Science Standard:

1-PS4 Waves and their Applications in Technologies for Information Transfer

K-2-ETS1 Engineering Design

1. Explore and draw a conclusion about the kinds of things that will move to magnet
2. Recognize that magnets attract things that have iron in them
3. Explore and infer that sound may be made by the movement of a rubber band
4. Explain the relationship between sound and vibration
5. Explore through observation that a magnet can pull through some things
6. Identify some things magnets can pull through
7. Name ways that people use magnets
8. Explore and infer that sound may be made by the movement of a rubber band
9. Explain the relationship between sound and vibration
10. Explore differences and similarities of sounds by comparing
11. Describe how sounds may be different and what they can communicate to us

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Second Grade Science Objectives

Chapter 1 - Plants

Next Generation Science Standard:

2-LS2 Ecosystems: Interactions, Energy, and Dynamics

K-2-ETS1 Engineering Design

1. Explore and classify living and nonliving things
2. Identify the needs of living things
3. Identify how plants are alike and different
4. Explore and predict how plants get light
5. Identify the parts of plants as leaves, stem, roots, flowers, fruits, and seeds
6. Explore and infer that seeds come from the fruits of plants
7. Recognize how seeds and fruits are made
8. Understand the life cycle of a plant
9. Explore and infer what people get from plants
10. Understand various ways people use plants

Chapter 2 - Animals

Next Generation Science Standard:

2-LS4 Biological Evolution: Unity and Diversity

K-2-ETS1 Engineering Design

1. Explore and classify animals to show how they are alike and different
2. Identify animal groups as mammals, birds, reptiles, amphibians, fish, and insects
3. Explore and communicate what a pet needs to live
4. Identify and understand that animals need air, water, food, and shelter
5. Explore and put in order life cycles of various animals
6. Identify the stages in the life cycle of a black bear
7. Identify the stages in the life cycle of a butterfly

Chapter 3 - Land Habitats

Next Generation Science Standard:

2-LS4 Biological Evolutions: Unity and Diversity

K-2-ETS1 Engineering Design

1. Explore and classify animals by where they live

2. Define habitats and identify the needs of plants and animals
3. Explore and make a model of a woodland forest
4. Identify features of a woodland forest and plants and animals that live there
5. Discuss how a woodland forest changes through the seasons
6. Explore and infer how some rain forest animals find shelter
7. Explore and draw a conclusion about how a leaf shape helps a plant to retain water
8. Identify features of a desert and plants and animals that live there
9. Explore and predict how camouflage helps animals to survive Identify the features of an Arctic habitat and the plants and animals that live there

Chapter 4 - Water Habitats

Next Generation Science Standard:

2-LS4 Biological Evolution: Unity and Diversity

K-2-ETS1 Engineering Design

1. Explore and infer how a duck's features help it to stay dry
2. Identify the features of a pond and the plants and animals that live there
3. Identify the features of a stream and the plants and animals that live there
4. Explore and observe how brine shrimp hatch in a salt water environment
5. Identify the features of an ocean and the plants and animals that live there
6. Understand a food web
7. Explore and predict how an oil spill can harm animals
8. Discuss ways habitats can be destroyed
9. Understand how we can help to protect the water and air and land

Chapter 5 - Weather and Earth Changes

Next Generation Science Standard:

2-ESS1 Earth's Place in the Universe (Lessons 2-3)

2-ESS2 Earth's Systems (Lesson 1)

K-2-ETS1 Engineering Design

1. Explore and draw a conclusion about where rainwater comes from
2. Understand evaporation, condensation, and the water cycle
3. Identify different types of weather, such as hurricane, tornado, drought, and flood
4. Explore and communicate how rocks can change
5. Understand erosion of rocks, sand, and soil
6. Explore and observe how earthquakes change Earth
7. Explain earthquakes, landslides, and volcanoes

Chapter 6 - Earth Yesterday and Today

Next Generation Science Standard:

2-ESS1 Earth's Place in the Universe

K-2-ETS1 Engineering Design

1. Explore and draw a conclusion about how imprints are made
2. Define fossils and understand how they are formed, and what they tell us about the past
3. Explore and make a model of dinosaur bones
4. Define paleontologist and explain how they work with fossils
5. Discuss how scientists infer information about the past from observing animals today
6. Explore and infer what happens to animals when they cannot meet their needs
7. Understand extinction as well as the role of humans in a population's extinction
8. Understand endangered animals and the role that humans can play in protecting a species

Chapter 9 - Matter

Next Generation Science Standard:

2-PS1 Matter and Its Interactions

K-2-ETS1 Engineering Design

1. Explore and observe matter inside containers
2. Define the terms matter and mass
3. Describe matter by its observable properties
4. Explore and order the mass of objects
5. Identify and distinguish differences between solids, liquids, and gases
6. Explore and investigate ways that matter can change
7. Define and understand physical change
8. Define and understand chemical change

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Third Grade Science Objectives

Chapter 1 - Plants

Next Generation Science Standard:

3-LS1 From Molecules to Organisms: Structures and Processes

3-LS3 Heredity: Inheritance and Variation of Traits

3-5-ETS1 Engineering Design

1. Explore how seeds, which are living, and gravel, which is not living, compare when placed in water
2. Compare the characteristics of living things and nonliving things
3. Identify the cells as the building block of living things
4. Describe some of the components of cells
5. Explore how water and light are necessary to plants
6. Explain the jobs of a plant's parts
7. Explain the food-making process in chloroplasts
8. Discuss how plants respond to the environment
9. Explore how seeds can grow into new plants
10. Describe how germination takes place
11. Compare flowering plants and conifers
12. Identify ways that plants can reproduce

Chapter 2 - Animals

Next Generation Science Standard:

3-LS2 Ecosystems: Interactions, Energy, and Dynamics

3-5-ETS1 Engineering Design

1. Explore the needs of an animal
2. Explain why animals need food, water, air, and shelter
3. Give examples of how animals meet their inner needs
4. Discuss ways that animals respond to changes in their environment
5. Explore how an animal changes as it grows
6. Identify stages of an animal's life cycle
7. Define metamorphosis and list some animals that undergo it as part of their life cycles
8. Contrast inherited traits with learned traits
9. Explore the parts of an insect

10. Identify parts that animals use to carry out their life activities
11. Explore ways to classify animals
12. Contrast vertebrates and invertebrates
13. Distinguish between fish, amphibians, reptiles, birds, and mammals

Chapter 5 - Earth's Resources

Next Generation Science Standard:

3-LS4 Biological Evolution: Unity and Diversity

3-5-ETS1 Engineering Design

1. Explore the properties of rocks
2. Identify properties of minerals
3. Explain the three ways that rocks form
4. Discuss how people use rocks and minerals
5. Explore the content of soil
6. Compare different kinds of soil
7. Explain how soil forms
8. Discuss why soil is important
9. Explore how fossils form
10. Compare how different fossils form
11. Identify kinds of fossil fuels
12. Explore where lakes form
13. Compare Earth's supplies of fresh water and salt water
14. Describe the steps of the water cycle
15. Identify Earth's sources of fresh water
16. Discuss the importance of conserving water
17. Explore how mining affects the land
18. Classify resources as renewable and nonrenewable
19. Explain why people should conserve resources
20. Identify ways to conserve resources

Chapter 6 - Forces Shape the Land

Next Generation Science Standard:

3-ESS2 Earth's Systems

3-ESS3 Earth and Human Activity

3-5-ETS1 Engineering Design

1. Explore how to compare Earth's surface features
2. Identify Earth's surface features
3. Discuss the surface features found in the United States

4. Explore how rocks change
5. Compare weathering and erosion
6. Identify ways humans change Earth's surface
7. Make a hypothesis about how layers settle in water
8. Explore how the intensity of rain affects soil erosion
9. Explain how storms, Earthquakes, and other natural events can change land quickly
10. Discuss how weather and human actions contributed to the Dust Bowl of the 1930s

Chapter 9 - How Things Move

Next Generation Science Standard:

3-PS2 Motion and Stability: Forces and Interactions

3-5-ETS1 Engineering Design

1. Explore how long it takes you to walk and run 10 meters
2. Define position, distance, motion, and speed
3. Explain how to find speeds using values of distance and time
4. Use maps to locate positions
5. Explore the forces needed to lift objects
6. Discuss forces using examples of common forces, such as gravity
7. Define weight as the pull of gravity on an object
8. Identify two units that measure forces
9. Explore the results of balancing and unbalancing the forces on an object
10. Explain that motion comes from unbalanced forces
11. Identify friction as a force that slows an object's motion
12. Discuss ways to control friction

Chapter 10 - Work and Machines

Next Generation Science Standard:

3-PS2 Motion and Stability: Forces and Interaction

3-5-ETS1 Engineering Design

1. Explore how work is defined
2. Define energy as the ability to do work
3. Discuss how energy can change one form to another
4. Explore ways to design a machine to lift an object
5. Define what machines do and identify some simple machines
6. Discuss how a lever, wheel and axle, and pulley make work easier
7. Explore how ramps can make work easier
8. Discuss how a ramp, wedge, and screw make work easier
9. Define a compound machine and give an example

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Fourth Grade Objectives

Chapter 3 - Describing Animals

Next Generation Science Standard:

4-LS1 From Molecules to Organisms: Structures and Processes

3-5ETS1 Engineering Design

1. Explore the characteristics of animals
2. Compare and contrast characteristics of animals including the presence or absence of a backbone and body plan (symmetry)
3. Classify animals based on symmetry
4. Explore the characteristics of invertebrates
5. Compare and contrast the characteristics of invertebrates, including sponges, cnidarians, flatworms, roundworms, segmented worms, mollusks, echinoderms, and arthropods
6. Describe the kind of animals that live in a coral reef
7. Explore how to compare and contrast vertebrates
8. Compare and contrast the characteristics of vertebrates, including three classes of fish, amphibians, reptiles, birds, and mammals
9. Describe ways animals can help people

Chapter 4- Life Processes

Next Generation Science Standard:

4-LS1 From Molecules to Organisms: Structures and Processes

3-5ETS1 Engineering Design

1. Explore the differences in the hearts of a fish and an amphibian
2. Compare and contrast the structures of organ systems in animals
3. Describe the functions of organ systems in animals
4. Explore that animals must reproduce for their species to survive
5. Describe the ways animals change as they grow
6. Compare and contrast different ways animals reproduce
7. Describe cloning as another example of asexual reproduction
8. Infer the importance of camouflage to survival
9. Recognize adaptations and explain how each benefits different animals
10. Compare and contrast inherited and learned behaviors
11. Describe ways animals can be trained to help people

Chapter 6- Earth's Surface and Interior

Next Generation Science Standard:

4-ESS1 Earth's Place in The Universe

4-ESS2 Earth's Systems

4-ESS3 Earth and Human Activity

3-5ETS1 Engineering Design

1. Explore the features left behind by glaciers and propose a possible explanation for how they were formed
2. Explain how glaciers form and change Earth's surface
3. Explain that glaciers move today and have moved in the past
4. Identify agents that wear away Earth's surface features
5. Explore and describe three different soil samples
6. Describe what soil is
7. Relate pore spaces to soil permeability
8. Explain the importance of soil and ways that we can help preserve it
9. Explore ways to make indirect observations
10. Describe how scientists gather information about Earth's interior
11. Explain how information from earthquake waves provides information about Earth's interior structure
12. Describe the structures of Earth

Chapter 12- Forms of Energy

Next Generation Science Standard:

4-PS3 Energy

4-PS4 Waves and Their Applications in Technologies for Information Transfer

3-5ETS1 Engineering Design

1. Explore how maps show relative position
2. Measure the (average) speed of a moving object
3. Discuss how forces can cause acceleration
4. Define inertia
5. List examples of forms and sources of energy
6. Explore ways to move something using a simple machine
7. Compare how the six simple machines make work easier
8. Describe how gears and compound machines do work
9. Explain what efficiency means
10. Explore what keeps walrus warm
11. Describe heat as a flow of energy
12. Explain how temperature is measured

13. Compare ways that heat is transferred
14. Describe some effects of heat
15. Explore colors of light
16. Describe visible light as a part of the electromagnetic spectrum
17. Compare the reflection and refraction of light
18. Explain why we see colors
19. Classify materials as transparent, translucent, or opaque
20. Explore how sounds can be produced and changed
21. Identify vibrations as the source of sound
22. Describe how the ear receives and transmits sound
23. Compare pitches, volumes, and intensities
24. Explain how sounds can be amplified

Voorhees Township Public Schools
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Fifth Grade Objectives

Chapter 1 - Classify Living Things

Next Generation Science Standard:

5-LS2 Ecosystems: Interactions, Energy, and Dynamics

3-5-ETS1 Engineering Design

1. Explore similarities among living things
2. Describe the levels of organization of many-celled organisms
3. Understand traits that are used to classify organisms
4. Describe characteristics of the kingdoms of life
5. Understand the differences between organisms that belong to different kingdoms
6. Explore the use of classification keys

Chapter 2 - Plant Structure and Functions

Next Generation Science Standard:

5-LS1 From Molecules to Organisms: Structures and Processes

5-PS3 Energy

3-5-ETS1 Engineering Design

1. Explore how a plant's parts help it survive
2. Understand the functions of roots, leaves, and stems
3. Describe the process of photosynthesis and respiration in plants
4. Explore how seed roots grow
5. Identify tropisms
6. Identify various adaptations plants have for survival

Chapter 3 - Plant Diversity

Next Generation Science Standard:

5-LS1 From Molecules to Organisms: Structures and Processes

5-LS2 Ecosystems: Interactions, Energy, and Dynamics

3-5-ETS1 Engineering Design

1. Explore parts mosses have for living in a moist environment
2. Compare and contrast seedless nonvascular plants with seedless vascular plants
3. Describe the life cycles of mosses and ferns
4. Describe the adaptations of plants for living on land

5. Explore how seed plants are alike and different
6. Compare gymnosperms with angiosperms
7. Compare and contrast monocots and dicots
8. Identify why plants have aromas
9. Explore the relationship between the parts of a flower and how the flower reproduces
10. Identify the different parts of a flower and infer the function of each
11. Explain the processes of seed dispersal, germination, and growth

Chapter 5 Interactions of Living Things

Next Generation Science Standard:

5-LS2 Ecosystems: Interactions, Energy, and Dynamics

5-ESS3 Earth and Human Activity

3-5-ETS1 Engineering Design

1. Explore land environments to test what living things need to survive
2. Describe ecosystems and the biotic and abiotic factors involved in them
3. Explain how organisms survive in variable and harsh environments
4. Explore how a change in a population can affect an ecosystem
5. Understand the relationship between food chains and food webs
6. Describe a food pyramid and the roles various organisms play in them
7. Understand the interactions of organisms in symbiosis, mutualism, parasitism, and commensalisms
8. Discuss variables that can affect population size and survival
9. Describe the role of limiting factors, including competition
10. Explain how environmental changes affect population survival
11. Discuss ways in which human activity affects the environment

Chapter 6 - Ecosystems

Next Generation Science Standard:

5-LS2 Ecosystems: Interactions, Energy, and Dynamics

3-5-ETS1 Engineering Design

1. Explore how water evaporates and condenses in a closed system
2. Describe how water and nutrients cycle through the environment
3. Describe how carbon and nitrogen cycle through the environment
4. Discuss the benefits of reuse, reduce, and recycle
5. Explore the importance of soil
6. Identify and locate Earth's six major land biomes
7. Compare and contrast the various biomes and aquatic ecosystems

8. Discuss how whales are threatened with extinction and how they are being protected
9. Explore how ecosystems change over time
10. Describe the changes to an ecosystem that occur during primary and secondary succession
11. Explain how catastrophic (sudden) changes can affect an ecosystem

Chapter 9 - Astronomy

Next Generation Science Standard:

5-ESS1 Earth's Place in the Universe

5-PS2 Motion and Stability: Forces and Interactions

3-5-ETS1 Engineering Design

1. Explore the orbit of a planet around the Sun
2. Describe the effect of gravity between objects in the solar system
3. Identify the effects of the Sun on Earth
4. Describe the phases of the Moon
5. Explore the problems involved in building a scale model of the solar system
6. Compare the characteristics of the inner planets
7. Compare the characteristics of the outer planets
8. Discuss the search for planets beyond our own solar system

Chapter 10 - Weather

Next Generation Science Standard:

5-ESS2 Earth's Systems

3-5-ETS1 Engineering Design

1. Explore how the angle of light affects temperature
2. Identify factors that affect temperatures on Earth
3. Explain how the atmosphere changes with elevation
4. Identify conditions that make up the weather
5. Explore how water changes as a result of heating and cooling
6. Relate humidity to the processes of evaporation
7. Explain what happens to water vapor with cooling
8. Describe a series of changes that water goes through
9. Explore how clouds form
10. Identify causes and types of clouds and precipitation
11. Describe how to compare amounts of rainfall and cloud cover
12. Explore what causes air pressure to change
13. Explain how air pressure is related to winds

14. Describe the paths of winds in global wind zones
15. Identify how wind is measured and recorded at weather stations

Chapter 11 - Weather Patterns and Climate

Next Generation Science Standard:

E-SS2 Earth's Systems

3-5-ETS1 Engineering Design

1. Explore how weather can differ in different parts of the country
2. Explain how air masses produce different kinds of weather along fronts
3. Describe how cold fronts and warm fronts affect the weather
4. Explore where tornadoes are most likely to happen
5. Explain how thunderstorms and tornadoes are related
6. Describe what hurricanes are and how they can cause damage
7. Explain how radar is used to track storms
8. Explore how temperatures and precipitation differ from place to place
9. Identify factors that make up and determine climate
10. Distinguish among the ways climates may change
11. Identify how climate affects health and food production

Chapter 12 - Properties and Structure of Matter

Next Generation Science Standard:

5-PS1 Matter and Its Interactions

3-5-ETS1 Engineering Design

1. Explore various properties of matter
2. Compare objects using various properties of matter
3. Classify matter based on physical properties including magnetism, ability to conduct/insulate heat, electricity, sound, and density
4. Recognize the importance of various properties of matter
5. Explore that matter can be made of more than one substance
6. Understand that all matter is made up of elements and compounds
7. Describe the structure and properties of elements
8. Recognize the importance of elements and compounds we find in our daily lives
9. Explore the melting point of ice
10. Explain that matter has the ability to exist in several different states (solids, liquids, gases)
11. Understand that matter expands or contracts as it changes state
12. Describe how the expansion and contraction of matter affects us

Chapter 13 - Forms of Matter and Energy

Next Generation Science Standard:

5-PS1 Matter and Its Interactions

5-PS3 Energy

3-5-ETS1 Engineering Design

1. Explore how to separate mixtures
2. Understand that mixtures maintain physical properties of their ingredients
3. Explain that mixtures of substances can be separated by using physical properties of the original substances
4. Communicate examples of solutions, heterogeneous mixtures, and colloids
5. Explore signs of chemical change
6. Compare physical changes to chemical changes
7. Recognize signs of chemical change
8. Understand the importance of chemical changes such as rusting
9. Explore which household items are acids, which are bases
10. Explain the properties of acids and bases
11. Investigate acid and base indicators
12. Understand acidity, alkalinity, and Ph
13. Explore how long various kinds of batteries last
14. Understand that chemical reactions can produce energy
15. Compare and contrast energy forms
16. Understand various properties of heat energy

Link to the Online Version
of
The New Jersey Student Learning Standards for Science
NGSS

<http://www.state.nj.us/education/aps/cccs/science/>

Evidence Statements

<http://www.nextgenscience.org/evidence-statements>