

Carolina™ Curriculum Correlation to Connecticut Core Science Content Standards



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CAROLINA
World-Class Support for Science & Math

Carolina™ Curriculum Correlation to Connecticut Core Science Content Standards

The following STC PROGRAM™ Units are recommended based on the Connecticut Core Science Content Standards. Provided for each grade level, are the units that most strongly align with the content objectives. Other STC PROGRAM™ Units may also match objectives within each grade level.

Kindergarten	STC® <ul style="list-style-type: none"> • Weather GEMS®: <ul style="list-style-type: none"> • Sifting Through Science • Terrarium Habitats • Tree Homes
1st Grade	STC® <ul style="list-style-type: none"> • Balancing and Weighing • Organisms • The Life Cycle of Butterflies Building Blocks of Science <ul style="list-style-type: none"> • Sky Watchers
2nd Grade	STC® <ul style="list-style-type: none"> • Plants Growth and Development • Soils • Solids and Liquids
3rd Grade	STC® <ul style="list-style-type: none"> • Animal Studies • Changes • Rocks and Minerals
4th Grade	STC® <ul style="list-style-type: none"> • Ecosystems • Electric Circuits • Land and Water • Motion and Design
5th Grade	STC® <ul style="list-style-type: none"> • Light GEMS® <ul style="list-style-type: none"> • Color Analyzers • Earth, Moon, and Stars • Microscopic Explorations
6th Grade	STC/MS™ <ul style="list-style-type: none"> • Catastrophic Events • Organisms-From Macro to Micro • Properties of Matter
7th Grade	STC/MS™ <ul style="list-style-type: none"> • Catastrophic Events • Energy, Machines and Motion • Human Body Systems
8th Grade	STC/MS™ <ul style="list-style-type: none"> • Earth in Space • Organisms-From Macro to Micro

THE CURRICULUM

The STC PROGRAM™ is made up of 2 research-based, inquiry-centered curriculums:

- Science and Technology for Children® (STC®) for grades K–6; and
- Science and Technology Concepts for Middle Schools™ (STC/MS™) for grades 6–8

Building Blocks of Science™ is a K-5 supplementary science curriculum that can be used as stand-alone instruction.

GEMS Kits® are standards-based PreK-8 math and science supplemental kits. The kits have been tested for specific grade levels but can also be used at lower or higher levels.

LEGEND

To save paper, the curriculum location information in this document has been abbreviated as follows:

- TG = Teacher’s Guide
- S-Sec3 = Section 3 (containing a section on safety) in the STC® Teacher’s Guide
- L01, L02, etc. = Lesson 1, Lesson 2, etc.
- Les01=Lesson 01
- Act01=Activity
- p, pp = page, pages
- RB = STC BOOK™ (a science reading book included in some of the grades 3–5 STC® unit kits)
- Exts = Extensions (found at the end of most lessons in the Teacher’s Guide)
- App-A, App-B = Appendix A, Appendix B (found at the end of Section 4 in the Teacher’s Guide)

THE STANDARDS FOR SCIENTIFIC INQUIRY, LITERACY AND NUMERACY ARE INTEGRAL PARTS OF THE CONTENT STANDARDS FOR EACH GRADE LEVEL IN THIS CLUSTER.

Grades PreK-2 Core Scientific Inquiry, Literacy and Numeracy

How is scientific knowledge created and communicated?

Content Standards	Expected Performances
<p>SCIENTIFIC INQUIRY</p> <ul style="list-style-type: none"> ◆ Scientific inquiry is a thoughtful and coordinated attempt to search out, describe, explain and predict natural phenomena. <p>SCIENTIFIC LITERACY</p> <ul style="list-style-type: none"> ◆ Scientific literacy includes speaking, listening, presenting, interpreting, reading and writing about science. <p>SCIENTIFIC NUMERACY</p> <ul style="list-style-type: none"> ◆ Mathematics provides useful tools for the description, analysis and presentation of scientific data and ideas. 	<p>A INQ.1 Make observations and ask questions about objects, organisms and the environment.</p> <p>A INQ.2 Use senses and simple measuring tools to collect data.</p> <p>A INQ.3 Make predictions based on observed patterns.</p> <p>A INQ.4 Read, write, listen and speak about observations of the natural world.</p> <p>A INQ.5 Seek information in books, magazines and pictures.</p> <p>A INQ.6 Present information in words and drawings.</p> <p>A INQ.7 Use standard tools to measure and describe physical properties such as weight, length and temperature.</p> <p>A INQ.8 Use nonstandard measures to estimate and compare the sizes of objects.</p> <p>A INQ.9 Count, order and sort objects by their properties.</p> <p>A INQ.10 Represent information in bar graphs.</p> <p>ALL STC® units</p>

PreK-Kindergarten

Core Themes, Content Standards and Expected Performances

Content Standards	Expected Performances
<p><i>Properties of Matter – How does the structure of matter affect the properties and uses of materials?</i></p> <p>K.1 - Objects have properties that can be observed and used to describe similarities and differences.</p> <ul style="list-style-type: none"> ◆ Some properties can be observed with the senses, and others can be discovered by using simple tools or tests. 	<p>A 1. Use the senses and simple measuring tools, such as rulers and equal-arm balances, to observe common objects and sort them into groups based on size, weight, shape or color.</p> <p style="padding-left: 20px;">Weather TG: App-A (pp151-152) TG: App-B (pp153-167) TG: L02 (pp11-24) TG: L05-10 (pp43-100)</p> <p>A 2. Sort objects made of materials such as wood, paper and metal into groups based on properties such as flexibility, attraction to magnets, and whether they float or sink in water.</p> <p style="padding-left: 20px;">Weather TG: L03 (pp25-32) TG: L14 (pp129-134) Sifting Through Science TG: Act01-2 (pp7-35)</p> <p>A 3. Count objects in a group and use mathematical terms to describe quantitative relationships such as: same as, more than, less than, equal, etc.</p>
<p><i>Heredity and Evolution – What processes are responsible for life’s unity and diversity?</i></p> <p>K.2 - Many different kinds of living things inhabit the Earth.</p> <ul style="list-style-type: none"> ◆ Living things have certain characteristics that distinguish them from nonliving things, including growth, movement, reproduction and response to stimuli. 	<p>A 4. Describe the similarities and differences in the appearance and behaviors of plants, birds, fish, insects and mammals (including humans).</p> <p style="padding-left: 20px;">Tree Homes TG: Act02 (pp25-31) TG: Act04-5 (pp41-63)</p> <p>A 5. Describe the similarities and differences in the appearance and behaviors of adults and their offspring.</p> <p>A 6. Describe characteristics that distinguish living from nonliving things.</p>
<p><i>Energy in the Earth’s Systems – How do external and internal sources of energy affect the Earth’s systems?</i></p> <p>K.3 - Weather conditions vary daily and seasonally.</p> <ul style="list-style-type: none"> ◆ Daily and seasonal weather conditions affect what we do, what we wear and how we feel. 	<p>A 7. Describe and record daily weather conditions.</p> <p>A 8. Relate seasonal weather patterns to appropriate choices of clothing and activities.</p> <p style="padding-left: 20px;">Tree Homes TG: Act03 (pp33-39)</p>

Science and Technology in Society – How do science and technology affect the quality of our lives?

K.4 - Some objects are natural, while others have been designed and made by people to improve the quality of life.

- ◆ Humans select both natural and man-made materials to build shelters based on local climate conditions, properties of the materials and their availability in the environment.

A 9. Describe the types of materials used by people to build houses, and the properties that make the materials useful.

Grade 1
Core Themes, Content Standards and Expected Performances

Content Standards	Expected Performances
<p><i>Forces and Motion – What makes objects move the way they do?</i></p> <p>1.1 - The sun appears to move across the sky in the same way every day, but its path changes gradually over the seasons.</p> <ul style="list-style-type: none"> ◆ An object’s position can be described by locating it relative to another object or the background. ◆ An object’s motion can be described by tracing and measuring its position over time. 	<p>A 10. Describe how the motion of objects can be changed by pushing and pulling.</p> <p>A 11. Describe the apparent movement of the sun across the sky and the changes in the length and direction of shadows during the day.</p> <p>Building Blocks of Science: Sky Watchers TG: L01-2 (pp 1-6)</p>
<p><i>Structure and Function – How are organisms structured to ensure efficiency and survival?</i></p> <p>1.2 - Living things have different structures and behaviors that allow them to meet their basic needs.</p> <ul style="list-style-type: none"> ◆ Animals need air, water and food to survive. ◆ Plants need air, water and sunlight to survive. 	<p>A 12. Describe the different ways that animals, including humans, obtain water and food.</p> <p style="padding-left: 20px;">The Life Cycle of Butterflies TG: App-B (pp101-110) TG: L01-11 (pp3-74) TG: L13-16 (pp81-96)</p> <p style="padding-left: 20px;">Organisms TG: L07-10 (pp75-118) TG: L14-17 (pp149-182)</p> <p>A 13. Describe the different structures plants have for obtaining water and sunlight.</p> <p style="padding-left: 20px;">Organisms TG: L13 (pp135-148) TG: L15 (pp155-168) TG: L17 (pp179-182)</p> <p>A 14. Describe the structures that animals, including humans, use to move around.</p> <p style="padding-left: 20px;">Organisms TG: L14 (pp149-154)</p>
<p><i>Structure and Function – How are organisms structured to ensure efficiency and survival?</i></p> <p>1.3 - Organisms change in form and behavior as part of their life cycles.</p> <ul style="list-style-type: none"> ◆ Some organisms undergo metamorphosis during their life cycles; other organisms grow and change, but their basic form stays essentially the same. 	<p>A 15. Describe the changes in organisms, such as frogs and butterflies, as they undergo metamorphosis.</p> <p style="padding-left: 20px;">The Life Cycle of Butterflies TG: App-A (pp97-100) TG: App-B (pp101-110) TG: L01 (pp3-10) TG: L03 (pp19-22) TG: L04.Exts (pp26-27) TG: L06.Exts (p37) TG: L07-9 (pp39-62) TG: L12.Exts (p77) TG: L13 (pp81-84)</p> <p style="padding-left: 20px;">Organisms TG: L10.Exts (p115)</p>

	<p>A 16. Describe the life cycles of organisms that grow but do not metamorphose.</p> <p>The Life Cycle of Butterflies TG: App-A (pp97-100) TG: App-B (pp101-110) TG: L01-16 (pp3-96)</p>
<p><i>Science and Technology in Society – How do science and technology affect the quality of our lives?</i></p> <p>1.4 - The properties of materials and organisms can be described more accurately through the use of standard measuring units.</p> <ul style="list-style-type: none"> ◆ Various tools can be used to measure, describe and compare different objects and organisms. 	<p>A 17. Estimate, measure and compare the sizes and weights of different objects and organisms using standard and nonstandard measuring tools.</p> <p>Balancing and Weighing TG: L02-17 (pp9-138)</p>

Grade 2
Core Themes, Content Standards and Expected Performances

Content Standards	Expected Performances
<p><i>Properties of Matter – How does the structure of matter affect the properties and uses of materials?</i></p> <p>2.1 - Materials can be classified as solid, liquid or gas based on their observable properties.</p> <ul style="list-style-type: none"> ◆ Solids tend to maintain their own shapes, while liquids tend to assume the shapes of their containers, and gases fill their containers fully. 	<p>A 18. Describe differences in the physical properties of solids and liquids.</p> <p>Solids and Liquids TG: L01-17 (pp3-140)</p>
<p><i>Structure and Function – How are organisms structured to ensure efficiency and survival?</i></p> <p>2.2 - Plants change their forms as part of their life cycles.</p> <ul style="list-style-type: none"> ◆ The life cycles of flowering plants include seed germination, growth, flowering, pollination and seed dispersal. 	<p>A 19. Describe the life cycles of flowering plants as they grow from seeds, proceed through maturation and produce new seeds.</p> <p>Plant Growth and Development TG: L01-13 (pp3-78) TG: L15-17 (pp89-100)</p> <p>Soils TG: L09-10 (pp87-108) TG: L16 (pp159-168)</p> <p>A 20. Explore and describe the effects of light and water on seed germination and plant growth.</p> <p>Plant Growth and Development TG: L01-7 (pp3-42) TG: L12 (pp67-70) TG: L15-17 (pp89-100)</p> <p>Soils TG: L09-10 (pp87-108) TG: L16 (pp159-168)</p>
<p><i>The Changing Earth – How do materials cycle through the Earth’s systems?</i></p> <p>2.3 - Earth materials have varied physical properties which make them useful in different ways.</p> <ul style="list-style-type: none"> ◆ Soils can be described by their color, texture and capacity to retain water. ◆ Soils support the growth of many kinds of plants, including those in our food supply. 	<p>A 21. Sort different soils by properties, such as particle size, color and composition.</p> <p>Soils TG: L01 (pp3-16) TG: L03-5 (pp27-56) TG: L08 (pp73-86) TG: L11-12 (pp109-124) TG: L12 (pp115-124)</p> <p>A 22. Relate the properties of different soils to their capacity to retain water and support the growth of certain plants.</p> <p>Soils TG: L01-5 (pp3-56) TG: L07-8 (pp65-86) TG: L11-13 (pp106-138) TG: L14.Exts (p143)</p>

Science and Technology in Society – How do science and technology affect the quality of our lives?

2.4 - Human beings, like all other living things, have special nutritional needs for survival.

- ◆ The essential components of balanced nutrition can be obtained from plant and animal sources.
- ◆ People eat different foods in order to satisfy nutritional needs for carbohydrates, proteins and fats.

A 23. Identify the sources of common foods and classify them by their basic food groups.

A 24. Describe how people in different cultures use different food sources to meet their nutritional needs.

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Grades 3-5 Core Scientific Inquiry, Literacy and Numeracy

How is scientific knowledge created and communicated?

Content Standards	Expected Performances
<p>SCIENTIFIC INQUIRY</p> <ul style="list-style-type: none"> ◆ Scientific inquiry is a thoughtful and coordinated attempt to search out, describe, explain and predict natural phenomena. <p>SCIENTIFIC LITERACY</p> <ul style="list-style-type: none"> ◆ Scientific literacy includes speaking, listening, presenting, interpreting, reading and writing about science. <p>SCIENTIFIC NUMERACY</p> <ul style="list-style-type: none"> ◆ Mathematics provides useful tools for the description, analysis and presentation of scientific data and ideas. 	<p>B INQ.1 Make observations and ask questions about objects, organisms and the environment.</p> <p>B INQ.2 Seek relevant information in books, magazines and electronic media.</p> <p>B INQ.3 Design and conduct simple investigations.</p> <p>B INQ.4 Employ simple equipment and measuring tools to gather data and extend the senses.</p> <p>B INQ.5 Use data to construct reasonable explanations.</p> <p>B INQ.6 Analyze, critique and communicate investigations using words, graphs and drawings.</p> <p>B INQ.7 Read and write a variety of science-related fiction and nonfiction texts.</p> <p>B INQ.8 Search the Web and locate relevant science information.</p> <p>B INQ.9 Use measurement tools and standard units (e.g., centimeters, meters, grams, kilograms) to describe objects and materials.</p> <p>B INQ.10 Use mathematics to analyze, interpret and present data.</p> <p>ALL STC® UNITS</p>

Grade 3

Core Themes, Content Standards and Expected Performances

Content Standards	Expected Performances
<p><i>Properties of Matter – How does the structure of matter affect the properties and uses of materials?</i></p> <p>3.1 - Materials have properties that can be identified and described through the use of simple tests.</p> <ul style="list-style-type: none"> ◆ Heating and cooling cause changes in some of the properties of materials. 	<p>B 1. Sort and classify materials based on properties such as dissolving in water, sinking and floating, conducting heat, and attracting to magnets.</p> <p>Animal Studies TG: L01-2 (pp3-20)</p> <p>Changes TG: L01.Exts (pp10-11) TG: L05-8 (pp53-84) TG: L09.Exts (pp89-90) TG: L13.Exts (p123) TG: L14.Exts (p134)</p> <p>Rocks and Minerals TG: L01-3 (pp3-26) TG: L04.Exts (p32) TG: L07 (pp51-56) TG: L09 (pp63-70) TG: L10.Exts (pp73-74) TG: L11-13 (pp79-94) TG: L16.Exts (p117)</p> <p>B 2. Describe the effect of heating on the melting, evaporation, condensation and freezing of water.</p> <p>Changes TG: L01-3 (pp3-42) TG: L08-9 (pp79-94) TG: L13.Exts (p123) TG: L17 (pp155-158)</p>
<p><i>Heredity and Evolution – What processes are responsible for life’s unity and diversity?</i></p> <p>3.2 - Organisms can survive and reproduce only in environments that meet their basic needs.</p> <ul style="list-style-type: none"> ◆ Plants and animals have structures and behaviors that help them survive in different environments. 	<p>B 3. Describe how different plants and animals are adapted to obtain air, water, food and protection in specific land habitats.</p> <p>Animal Studies RB: (pp06-11) RB: (pp16-19) RB: (pp30-32) RB: (pp45-49) TG: L01-4 (pp3-48) TG: L06-16 (pp65-168)</p> <p>B 4. Describe how different plants and animals are adapted to obtain air, water, food and protection in water habitats.</p>
<p><i>The Changing Earth – How do materials cycle through the Earth’s systems?</i></p> <p>3.3 - Earth materials have different physical</p>	<p>B 5. Describe the physical properties of rocks and relate them to their potential uses.</p> <p>Rocks and Minerals TG: L01-4 (pp3-34)</p>

<p>and chemical properties.</p> <ul style="list-style-type: none"> ◆ Rocks and minerals have properties that may be identified through observation and testing; these properties determine how earth materials are used. 	<p>TG: L16-17 (pp113-128)</p> <p>B 6. Relate the properties of rocks to the possible environmental conditions during their formation.</p> <p>Rocks and Minerals TG: L01-4 (pp3-34) TG: L16-17 (pp113-128)</p>
<p><i>Science and Technology in Society – How do science and technology affect the quality of our lives?</i></p> <p>3.4 - Earth materials provide resources for all living things, but these resources are limited and should be conserved.</p> <ul style="list-style-type: none"> ◆ Decisions made by individuals can impact the global supply of many resources. 	<p>B 7. Describe how earth materials can be conserved by reducing the quantities used, and by reusing and recycling materials rather than discarding them.</p> <p>Animal Studies RB: (pp06-08) RB: (pp35-37) RB: (pp45-49) TG: L01 (pp3-10) TG: L17 (pp169-172)</p> <p>Changes TG: L06.Exts (pp67-69)</p>

Grade 4
Core Themes, Content Standards and Expected Performances

Content Standards	Expected Performances
<p><i>Forces and Motion – What makes objects move the way they do?</i></p> <p>4.1 - The position and motion of objects can be changed by pushing or pulling.</p> <ul style="list-style-type: none"> ◆ The size of the change in an object’s motion is related to the strength of the push or pull. ◆ The more massive an object is, the less effect a given force will have on its motion. 	<p>B 8. Describe the effects of the strengths of pushes and pulls on the motion of objects.</p> <p style="text-align: center;">Motion and Design</p> <p>TG: L03-5 (pp25-56) TG: L07.Exts (pp68-69) TG: L08-13 (pp73-124) TG: L15 (pp139-144) TG: L17 (pp153-156)</p> <p>B 9. Describe the effect of the mass of an object on its motion.</p> <p style="text-align: center;">Motion and Design</p> <p>TG: L03-5 (pp25-56) TG: L07.Exts (pp68-69) TG: L08-13 (pp73-124) TG: L15 (pp139-144) TG: L17 (pp153-156)</p>
<p><i>Matter and Energy in Ecosystems – How do matter and energy flow through ecosystems?</i></p> <p>4.2 - All organisms depend on the living and non-living features of the environment for survival.</p> <ul style="list-style-type: none"> ◆ When the environment changes, some organisms survive and reproduce, and others die or move to new locations. 	<p>B 10. Describe how animals, directly or indirectly, depend on plants to provide the food and energy they need in order to grow and survive.</p> <p style="text-align: center;">Ecosystems</p> <p>RB: (pp14-16) TG: L03-4 (pp25-52) TG: L07 (pp75-82) TG: L12 (pp117-124)</p> <p>B 11. Describe how natural phenomena and some human activities may cause changes to habitats and their inhabitants.</p> <p style="text-align: center;">Ecosystems</p> <p>RB: (pp20-23) RB: (pp26-27) TG: L01-9 (pp3-98) TG: L12-17 (pp117-171)</p> <p style="text-align: center;">Land and Water</p> <p>TG: L13.Exts (pp147-148)</p>
<p><i>Energy in the Earth’s Systems – How do external and internal sources of energy affect the Earth’s systems?</i></p> <p>4.3 - Water has a major role in shaping the Earth’s surface.</p> <ul style="list-style-type: none"> ◆ Water circulates through the Earth’s crust, oceans and atmosphere. 	<p>B 12. Describe how the sun’s energy impacts the water cycle.</p> <p style="text-align: center;">Land and Water</p> <p>TG: L01-3 (pp3-36) TG: L06 (pp63-74) TG: L09.Exts (p103) TG: L14.Exts (p156) TG: L15.Exts (p167)</p>

	<p>B 13. Describe the role of water in erosion and river formation.</p> <p>Land and Water TG: L03-6 (pp29-74) TG: L07.Exts (p79) TG: L09.Exts (p103) TG: L10-16 (pp109-182)</p>
<p><i>Energy Transfer and Transformations – What is the role of energy in our world?</i></p> <p>4.4 - Electrical and magnetic energy can be transferred and transformed.</p> <ul style="list-style-type: none"> ◆ Electricity in circuits can be transformed into light, heat, sound and magnetic effects. ◆ Magnets can make objects move without direct contact between the object and the magnet. 	<p>B 14. Describe how batteries and wires can transfer energy to light a light bulb.</p> <p>Electric Circuits RB: (pp13-16) RB: (pp29-33) RB: (pp39-44) TG: L01-17(pp3-86)</p> <p>B 15. Explain how simple electrical circuits can be used to determine which materials conduct electricity.</p> <p>Electric Circuits RB: (pp13-16) RB: (pp29-33) RB: (pp39-44) TG: L01-17 (pp3-86)</p> <p>B 16. Describe the properties of magnets, and how they can be used to identify and separate mixtures of solid materials.</p>

Grade 5
Core Themes, Content Standards and Expected Performances

Content Standards	Expected Performances
<p><i>Energy Transfer and Transformations – What is the role of energy in our world?</i></p> <p>5.1 - Sound and light are forms of energy.</p> <ul style="list-style-type: none"> ◆ Sound is a form of energy that is produced by the vibration of objects and is transmitted by the vibration of air and objects. ◆ Light is a form of energy that travels in a straight line and can be reflected by a mirror, refracted by a lens, or absorbed by objects. 	<p>B 17. Describe the factors that affect the pitch and loudness of sound produced by vibrating objects.</p> <p style="padding-left: 20px;">Sound TG: L04-07 (pp23-54) TG: L09-11 (pp67-82) TG: L13 (pp91-93) TG: L15 (pp103-106)</p> <p>B 18. Describe how sound is transmitted, reflected and/or absorbed by different materials.</p> <p style="padding-left: 20px;">Sound TG: L02-04 (pp11-29) TG: L06 (pp39-45) TG: L08-10 (pp57-76) TG: L13-15 (pp91-106)</p> <p>B 19. Describe how light is absorbed and/or reflected by different surfaces.</p> <p style="padding-left: 20px;">Color Analyzers TG: Act04 (pp31-37)</p>
<p><i>Structure and Function – How are organisms structured to ensure efficiency and survival?</i></p> <p>5.2 - Perceiving and responding to information about the environment is critical to the survival of organisms.</p> <ul style="list-style-type: none"> ◆ The sense organs perceive stimuli from the environment and send signals to the brain through the nervous system. 	<p>B 20. Describe how light absorption and reflection allow one to see the shapes and colors of objects.</p> <p style="padding-left: 20px;">Color Analyzers TG: Act01-4 (pp5-37) TG: Exts (pp38-40)</p> <p>B 21. Describe the structure and function of the human senses and the signals they perceive.</p>
<p><i>Earth in the Solar System – How does the position of Earth in the solar system affect conditions on our planet?</i></p> <p>5.3 - Most objects in the solar system are in a regular and predictable motion.</p> <ul style="list-style-type: none"> ◆ The positions of the Earth and moon relative to the sun explain the cycles of day and night, and the monthly moon phases. 	<p>B 22. Explain the cause of day and night based on the rotation of Earth on its axis.</p> <p style="padding-left: 20px;">Earth, Moon, and Stars TG: Act05-6 (pp33-52)</p> <p>B 23. Describe the monthly changes in the appearance of the moon, based on the moon’s orbit around the Earth.</p> <p style="padding-left: 20px;">Earth, Moon, and Stars TG: Act03-4 (pp17-32)</p>
<p><i>Science and Technology in Society – How do science and technology affect the quality of our lives?</i></p> <p>5.4 - Humans have the capacity to build and use tools to advance the quality of their lives.</p>	<p>B 24. Compare and contrast the structures of the human eye with those of the camera.</p> <p>B 25. Describe the uses of different instruments, such as eyeglasses, magnifiers, periscopes and</p>

<ul style="list-style-type: none"> ◆ Advances in technology allow individuals to acquire new information about the world. 	telescopes, to enhance our vision. Microscopic Explorations TG: Act02-10 (pp43-97)
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Grades 6-8 Core Scientific Inquiry, Literacy and Numeracy <i>How is scientific knowledge created and communicated?</i>	
Content Standards	Expected Performances
<p>SCIENTIFIC INQUIRY</p> <ul style="list-style-type: none"> ◆ Scientific inquiry is a thoughtful and coordinated attempt to search out, describe, explain and predict natural phenomena. ◆ Scientific inquiry progresses through a continuous process of questioning, data collection, analysis and interpretation. ◆ Scientific inquiry requires the sharing of findings and ideas for critical review by colleagues and other scientists. <p>SCIENTIFIC LITERACY</p> <ul style="list-style-type: none"> ◆ Scientific literacy includes speaking, listening, presenting, interpreting, reading and writing about science. ◆ Scientific literacy also includes the ability to search for and assess the relevance and credibility of scientific information found in various print and electronic media. <p>SCIENTIFIC NUMERACY</p> <ul style="list-style-type: none"> ◆ Scientific numeracy includes the ability to use mathematical operations and procedures to calculate, analyze and present scientific data and ideas. 	<p>C INQ.1 Identify questions that can be answered through scientific investigation.</p> <p>C INQ.2 Read, interpret and examine the credibility of scientific claims in different sources of information.</p> <p>C INQ.3 Design and conduct appropriate types of scientific investigations to answer different questions.</p> <p>C INQ.4 Identify independent and dependent variables, and those variables that are kept constant, when designing an experiment.</p> <p>C INQ.5 Use appropriate tools and techniques to make observations and gather data.</p> <p>C INQ.6 Use mathematical operations to analyze and interpret data.</p> <p>C INQ.7 Identify and present relationships between variables in appropriate graphs.</p> <p>C INQ.8 Draw conclusions and identify sources of error.</p> <p>C INQ.9 Provide explanations to investigated problems or questions.</p> <p>C INQ.10 Communicate about science in different formats, using relevant science vocabulary, supporting evidence and clear logic.</p> <p>ALL STC® UNITS</p>

Grade 6
Core Themes, Content Standards and Expected Performances

Content Standards	Expected Performances
<p><i>Properties of Matter – How does the structure of matter affect the properties and uses of materials?</i></p> <p>6.1 - Materials can be classified as pure substances or mixtures, depending on their chemical and physical properties.</p> <ul style="list-style-type: none"> ◆ Mixtures are made of combinations of elements and/or compounds, and they can be separated by using a variety of physical means. ◆ Pure substances can be either elements or compounds, and they cannot be broken down by physical means. 	<p>C 1. Describe the properties of common elements, such as oxygen, hydrogen, carbon, iron and aluminum.</p> <p style="padding-left: 20px;">Properties of Matter SG: L20-22 (pp170-207) TG: L20-22 (pp227-274)</p> <p>C 2. Describe how the properties of simple compounds, such as water and table salt, are different from the properties of the elements of which they are made.</p> <p style="padding-left: 20px;">Properties of Matter SG: L20-22 (pp170-207) TG: L20-23 (pp227-284)</p> <p>C 3. Explain how mixtures can be separated by using the properties of the substances from which they are made, such as particle size, density, solubility and boiling point.</p> <p style="padding-left: 20px;">Properties of Matter SG: L15 (pp122-129) SG: L17 (pp140-149) TG: L15 (pp161-168) TG: L17 (pp179-192)</p>
<p><i>Matter and Energy in Ecosystems – How do matter and energy flow through ecosystems?</i></p> <p>6.2 - An ecosystem is composed of all the populations that are living in a certain space and the physical factors with which they interact.</p> <ul style="list-style-type: none"> ◆ Populations in ecosystems are affected by biotic factors, such as other populations, and abiotic factors, such as soil and water supply. ◆ Populations in ecosystems can be categorized as producers, consumers and decomposers of organic matter. 	<p>C 4. Describe how abiotic factors, such as temperature, water and sunlight, affect the ability of plants to create their own food through photosynthesis.</p> <p style="padding-left: 20px;">Organisms - From Macro to Micro SG: L05 (pp46-63) SG: L10 (pp120-131) SG: L12-13 (pp146-171) TG: L01.Exts (p12) TG: L05.Exts (pp69-70) TG: L05 (pp57-72) TG: L10 (pp167-184) TG: L12-13 (pp201-236)</p> <p>C 5. Explain how populations are affected by predator-prey relationships.</p> <p style="padding-left: 20px;">Organisms - From Macro to Micro SG: L17 (pp194-203) TG: L12.Exts (p207)</p> <p>C 6. Describe common food webs in different Connecticut ecosystems.</p>

<p><i>Energy in the Earth's Systems – How do external and internal sources of energy affect the Earth's systems?</i></p> <p>6.3 - Variations in the amount of the sun's energy hitting the Earth's surface affect daily and seasonal weather patterns.</p> <ul style="list-style-type: none"> ◆ Local and regional weather are affected by the amount of solar energy these areas receive and by their proximity to a large body of water. 	<p>C 7. Describe the effect of heating on the movement of molecules in solids, liquids and gases.</p> <p>Properties of Matter TG: L02.Exts (p21) TG: L07.Exts (p86) TG: L08.Exts (p96) TG: L12.Exts (p140) TG: L14.Exts (p157) TG: L15.Exts (p166)</p> <p>C 8. Explain how local weather conditions are related to the temperature, pressure and water content of the atmosphere and the proximity to a large body of water.</p> <p>Catastrophic Events SG: L02-3 (pp12-41) SG: L05-7 (pp54-95) TG: L02-3 (pp17-44) TG: L05-7 (pp57-102)</p> <p>C 9. Explain how the uneven heating of the Earth's surface causes winds.</p> <p>Catastrophic Events SG: L02 (pp12-25) SG: L05 (pp54-67) SG: L07 (pp80-95) TG: L02 (pp17-26) TG: L05 (pp57-68) TG: L07 (pp83-102)</p>
<p><i>Science and Technology in Society – How do science and technology affect the quality of our lives?</i></p> <p>6.4 - Water moving across and through earth materials carries with it the products of human activities.</p> <ul style="list-style-type: none"> ◆ Most precipitation that falls on Connecticut eventually reaches Long Island Sound. 	<p>C 10. Explain the role of septic and sewage systems on the quality of surface and ground water.</p> <p>Organisms - From Macro to Micro TG: L18.Exts (pp299-300)</p> <p>C 11. Explain how human activity may impact water resources in Connecticut, such as ponds, rivers and the Long Island Sound ecosystem.</p>

Grade 7
Core Themes, Content Standards and Expected Performances

Content Standards	Expected Performances
<p><i>Energy Transfer and Transformations – What is the role of energy in our world?</i></p> <p>7.1 - Energy provides the ability to do work and can exist in many forms.</p> <ul style="list-style-type: none"> ◆ Work is the process of making objects move through the application of force. ◆ Energy can be stored in many forms and can be transformed into the energy of motion. 	<p>C 12. Explain the relationship among force, distance and work, and use the relationship ($W=F \times D$) to calculate work done in lifting heavy objects.</p> <p style="padding-left: 20px;">Energy, Machines and Motion SG: L08 (pp72-81) SG: L10-16 (pp92-161) SG: L20-22 (pp200-236) TG: L07.Exts (p83) TG: L08-16 (pp85-202) TG: L20-22 (pp235-254)</p> <p>C 13. Explain how simple machines, such as inclined planes, pulleys and levers, are used to create mechanical advantage.</p> <p style="padding-left: 20px;">Energy, Machines and Motion SG: L01 (pp2-11) SG: L08 (pp72-81) SG: L11-16 (pp100-161) SG: L19 (pp188-199) SG: L22 (pp226-236) TG: L01 (pp3-22) TG: L08 (pp85-98) TG: L11-17 (pp131-216) TG: L21.Exts (p245) TG: L22 (pp247-254)</p> <p>C 14. Describe how different types of stored (potential) energy can be used to make objects move.</p> <p style="padding-left: 20px;">Energy, Machines and Motion SG: L02-4 (pp12-35) TG: L02-4 (pp23-46) TG: L21 (pp239-246)</p>
<p><i>Structure and Function – How are organisms structured to ensure efficiency and survival?</i></p> <p>7.2 - Many organisms, including humans, have specialized organ systems that interact with each other to maintain dynamic internal balance.</p> <ul style="list-style-type: none"> ◆ All organisms are composed of one or more cells; each cell carries on life-sustaining functions. ◆ Multicellular organisms need specialized structures and systems to perform basic life functions. 	<p>C 15. Describe the basic structures of an animal cell, including nucleus, cytoplasm, mitochondria and cell membrane, and how they function to support life.</p> <p>C 16. Describe the structures of the human digestive, respiratory and circulatory systems, and explain how they function to bring oxygen and nutrients to the cells and expel waste materials.</p> <p style="padding-left: 20px;">Human Body Systems SG: L02 (pp8-13) SG: L04-8 (pp24-65) SG: L10-11 (pp76-97) SG: L14-17 (pp120-147)</p>

	<p>SG: L22 (pp182-189) TG: L01-2 (pp3-18) TG: L05.Exts (p52) TG: L07 (pp69-80) TG: L10-11 (pp113-136) TG: L12.Exts (pp147-148) TG: L14-17 (pp159-208) TG: L22 (pp253-276)</p> <p>C 17. Explain how the human musculo-skeletal system supports the body and allows movement.</p> <p>Human Body Systems SG: L18-21 (pp150-181) TG: L01 (pp3-10) TG: L02.Exts (p17) TG: L18-21 (pp209-252)</p>
<p><i>Energy in the Earth's Systems – How do external and internal sources of energy affect the Earth's systems?</i></p> <p>7.3 - Landforms are the result of the interaction of constructive and destructive forces over time.</p> <ul style="list-style-type: none"> ◆ Volcanic activity and the folding and faulting of rock layers during the shifting of the Earth's crust affect the formation of mountains, ridges and valleys. ◆ Glaciation, weathering and erosion change the Earth's surface by moving earth materials from place to place. 	<p>C 18. Describe how folded and faulted rock layers provide evidence of the gradual up and down motion of the Earth's crust.</p> <p>Catastrophic Events SG: L01-25 (pp2-282) TG: L01-25 (pp3-372)</p> <p>C 19. Explain how glaciation, weathering and erosion create and shape valleys and floodplains.</p> <p>C 20. Explain how the boundaries of tectonic plates can be inferred from the location of earthquakes and volcanoes.</p> <p>Catastrophic Events SG: L08 (pp96-101) SG: L10-20 (pp114-231) SG: L23-25 (pp252-282) TG: L08 (pp103-126) TG: L10-20 (pp143-292) TG: L23-25 (pp217-372)</p>
<p><i>Science and Technology in Society – How do science and technology affect the quality of our lives?</i></p> <p>7.4 - Technology allows us to improve food production and preservation, thus improving our ability to meet the nutritional needs of growing populations.</p> <ul style="list-style-type: none"> ◆ Various microbes compete with humans for the same sources of food. 	<p>C 21. Describe how freezing, dehydration, pickling and irradiation prevent food spoilage caused by microbes.</p>

Grade 8
Core Themes, Content Standards and Expected Performances

Content Standards	Expected Performances
<p><i>Forces and Motion – What makes objects move the way they do?</i></p> <p>8.1 - An object’s inertia causes it to continue moving the way it is moving unless it is acted upon by a force to change its motion.</p> <ul style="list-style-type: none"> ◆ The motion of an object can be described by its position, direction of motion and speed. ◆ An unbalanced force acting on an object changes its speed and/or direction of motion. ◆ Objects moving in circles must experience force acting toward the center. 	<p>C 22. Calculate the average speed of a moving object and illustrate the motion of objects in graphs of distance over time.</p> <p>C 23. Describe the qualitative relationships among force, mass and changes in motion.</p> <p style="text-align: center;">Earth in Space TG: L15 (pp221-244)</p> <p>C 24. Describe the forces acting on an object moving in a circular path.</p>
<p><i>Heredity and Evolution – What processes are responsible for life’s unity and diversity?</i></p> <p>8.2 - Reproduction is a characteristic of living systems and it is essential for the continuation of every species.</p> <ul style="list-style-type: none"> ◆ Heredity is the passage of genetic information from one generation to another. ◆ Some of the characteristics of an organism are inherited and some result from interactions with the environment. 	<p>C 25. Explain the similarities and differences in cell division in somatic and germ cells.</p> <p style="text-align: center;">Organisms - From Macro to Micro SG: L08-9 (pp96-119) SG: L19 (pp216-235) TG: L03.Exts (p41) TG: L08-9 (pp131-166) TG: L19 (pp303-330)</p> <p>C 26. Describe the structure and function of the male and female human reproductive systems, including the process of egg and sperm production.</p> <p>C 27. Describe how genetic information is organized in genes on chromosomes, and explain sex determination in humans.</p> <p style="text-align: center;">Organisms - From Macro to Micro SG: L08 (pp96-105) SG: L19 (pp216-235) TG: L08 (pp131-150) TG: L19 (pp303-330)</p>
<p><i>Earth in the Solar System – How does the position of Earth in the solar system affect conditions on our planet?</i></p> <p>8.3 - The solar system is composed of planets and other objects that orbit the sun.</p> <ul style="list-style-type: none"> ◆ Gravity is the force that governs the motions of objects in the solar system. ◆ The motion of the Earth and moon relative to the sun causes daily, monthly and yearly cycles on Earth. 	<p>C 28. Explain the effect of gravity on the orbital movement of planets in the solar system.</p> <p style="text-align: center;">Earth in Space SG: L02 (pp12-21) SG: L05-6 (pp62-87) SG: L06 (pp74-87) SG: L14-16 (pp200-265) SG: L22 (pp340-343) TG: L02 (pp11-20) TG: L05-6 (pp53-82) TG: L14--162 (pp209-268) TG: L22 (pp311-326)</p>

	<p>C 29. Explain how the regular motion and relative position of the sun, Earth and moon affect the seasons, phases of the moon and eclipses.</p> <p>Earth in Space SG: L01-9 (pp2-127) SG: L16 (pp244-265) TG: L01-9 (pp3-146) TG: L16 (pp245-268)</p>
<p><i>Science and Technology in Society – How do science and technology affect the quality of our lives?</i></p> <p>8.4 - In the design of structures there is a need to consider factors such as function, materials, safety, cost and appearance.</p> <ul style="list-style-type: none"> ◆ Bridges can be designed in different ways to withstand certain loads and potentially destructive forces. 	<p>C 30. Explain how beam, truss and suspension bridges are designed to withstand the forces that act on them.</p> <p>Earth in Space TG: L01.Exts (p10) TG: L07.Exts (pp92-93)</p>