



A Correlation of the

**Science and Technology
for Children™ Curriculum**

to the

**Chicago Academic Standards
& Frameworks for Science**

Prepared by

 **Carolina Biological Supply Company**

Working Together To Be The Most Valued
Teammate Of Every Science Educator

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The following tables are provided to give a quick visual guide to the correlation of the Science and Technology for Children™ (STC™) units of study to the Chicago Academic Standards & Frameworks for Science. Since there is some flexibility in grade-level placement with the STC units, we suggest that you give consideration to units recommended for the grade level above and the grade level below the grade being considered. For example, in the Grade 2 correlation, STC units from grades one, two, and three have been used. If an academic standard is met by an STC unit that falls outside the grade range, it is indicated by an asterisk (*). All fourth-grade through sixth-grade unit kits now include a Discovery Deck, a set of extensions for the unit. When the Discovery Deck meets or helps to meet an academic standard, the abbreviation DD will follow the unit abbreviation.

Key to STC™ Abbreviations

O Organisms	PGD Plant Growth and Development	Mw Microworlds
W Weather	RM Rocks and Minerals	E Ecosystems
SL Solids and Liquids	CT Chemical Tests	FC Food Chemistry
CM Comparing and Measuring	So Sound	FS Floating and Sinking
LCB The Life Cycle of Butterflies	AS Animal Studies	EP Experiments with Plants
S Soils	LW Land and Water	MT Measuring Time
C Changes	EC Electric Circuits	MM Magnets and Motors
BW Balancing and Weighing	MD Motion and Design	TP The Technology of Paper
DD Discovery Deck		

Recommended Grade Levels for STC™ Units

The National Science Resources Center (NSRC) recommends that an STC unit not be moved up or down more than one grade level from these recommendations.

1 st				2 nd				3 rd			
O	W	SL	CM	LCB	S	C	BW	PGD	RM	CT	So
4 th				5 th				6 th			
AS	LW	EC	MD	Mw	E	FC	FS	EP	MT	MM	TP

V0008

Kindergarten

STATE GOAL 11: Have a working knowledge of the processes of scientific inquiry and technological design to investigate questions, conduct experiments, and solve problems.	
Academic Standards	STC unit(s)
<p><i>CAS A. Understand that science involves asking and answering questions and comparing experimental results to what is already known.</i> CFS</p> <ol style="list-style-type: none"> 1. Conduct simple experiments and observe and explain what was discovered. 2. Read and discuss science-related materials from a variety of sources. 	<p>All STC units</p> <p>All STC units</p>
<p><i>CAS B. Design and conduct simple scientific investigations in which observations are made, data are gathered and organized, and reasonable conclusions are drawn.</i> CFS</p> <ol style="list-style-type: none"> 1. Ask questions and formulate hypotheses about objects, events, and organisms that can be tested through scientific investigation. 2. Describe and compare objects using the five senses (e.g., for color, shape, texture, size). 3. Select and use instruments to collect, organize, and present data related to a scientific investigation (thermometers, timers, magnifiers, balances). 4. Compare observations of individual and group results. 	<p>All STC units</p> <p>All STC units (The sense of taste is never used in STC units.) O, W, SL, CM</p> <p>All STC units</p>
<p><i>CAS C. Understand and apply the concepts, principles, and processes of technological design.</i> CFS</p> <ol style="list-style-type: none"> 1. Construct objects using component parts (e.g., model building, building blocks). 2. Use appropriate vocabulary to describe scientific phenomena and instrumentation. 	<p>W, CM</p> <p>All STC units</p>
STATE GOAL 12: Have a working knowledge of the fundamental concepts and principles of the life, physical, and earth/space sciences and their connection.	
Academic Standards	STC unit(s)
<p><i>CAS A. Compare and describe life cycles, basic needs, characteristics, and component parts of organisms.</i> CFS</p> <ol style="list-style-type: none"> 1. Compare living things to non-living things; classify living things as plants or animals. 2. Identify and name component parts of organisms (e.g., legs, arms, antennae, tail). 3. Identify things as living or dead. 4. Describe basic needs characteristics of living things (e.g., food, water, air, shelter, space). 	<p>O</p> <p>O</p> <p>O</p> <p>O</p>
<p><i>CAS B. Understand effects of organisms on the environment and some features that help them survive and reproduce after a change in their environment.</i></p>	

<p>CFS</p> <ol style="list-style-type: none"> 1. Describe ways that offspring are much like their parents and one another. 2. Identify differences in appearance among individuals of the same population or group. 3. Compare plant and animal adaptations to the changing seasons. 	<p>O</p> <p>O</p>
<p><i>CAS C. Describe and compare the properties and interactions of matter and energy.</i></p> <p>CFS</p> <ol style="list-style-type: none"> 1. Compare solids, liquids, and gases and describe how some change from one state to the other. 2. Examine, describe, classify, and compare large-scale physical properties of matter (e.g., size, shape, color, texture, odor, flexibility, state of matter). 3. Discriminate among a variety of natural and man-made sounds. 	<p>W, SL (solids and liquids only)</p> <p>All STC units</p>
<p><i>CAS D. Investigate, explain, and demonstrate characteristics of forces and motion.</i></p> <p>CFS</p> <ol style="list-style-type: none"> 1. Compare and contrast an action and reaction in the behavior of objects. 	<p>SL, CM</p>
<p><i>CAS E. Investigate, describe, and compare properties of Earth's basic materials (water, air, rock) and the natural processes that change the earth's surface.</i></p> <p>CFS</p> <ol style="list-style-type: none"> 1. Identify major sources and uses of water. 	<p>W, SL</p>
<p><i>CAS F. Name and describe the main bodies of the solar system and their relationships.</i></p> <p>CFS</p> <ol style="list-style-type: none"> 1. Describe how shadows change throughout the day and year in relation to the position of the earth and sun. 	<p>MT*</p>
<p>STATE GOAL 13: Have a working knowledge of the relationships among science, technology, and society in historical and contemporary contexts.</p>	
<p>Academic Standards</p>	<p>STC unit(s)</p>
<p><i>CAS A. Identify and describe major technological changes and their effects on people, tools, and nature.</i></p> <p>CFS</p> <ol style="list-style-type: none"> 1. Identify inventions that assist human senses (e.g., hearing aid, binoculars, eyeglasses). 2. Describe ways that technology is helping to solve the problems of pollution (e.g., water treatment, recycling). 	<p>O, W, SL, CM</p> <p>SL</p>
<p><i>CAS B. Demonstrate understanding of conservation and the need to protect renewable and non-renewable natural resources.</i></p> <p>CFS</p> <ol style="list-style-type: none"> 1. List causes of pollution. 2. Demonstrate conservation practices such as recycling and reusing containers and paper. 	<p>SL</p> <p>SL</p>
<p><i>CAS C. Describe historical roles of people and societies in the development of current scientific knowledge.</i></p> <p>CFS</p>	

1. Read about and describe science-related careers and avocations.	All STC units
2. Read about and describe contributions of both male and female scientists, including those with physical disabilities, from a wide variety of cultures.	All STC units
<i>CAS D. Follow basic safety rules.</i> CFS	
1. Explain the need for order, cleanliness, and safe practices during an experiment.	W, SL
2. Describe safety hazards associated with laboratory investigations (e.g., no tasting of any chemicals).	W, SL

Grade One

STATE GOAL 11: Have a working knowledge of the processes of scientific inquiry and technological design to investigate questions, conduct experiments, and solve problems.	
Academic Standards	STC unit(s)
<i>CAS A. Understand that science involves asking and answering questions and comparing experimental results to what is already known.</i> CFS	
1. Conduct simple experiments and observe and explain what was discovered.	All STC units
2. Demonstrate how repeated observations improve confidence in results.	BW
3. Read and discuss science-related materials from a variety of sources.	All STC units
<i>CAS B. Design and conduct simple scientific investigations in which observations are made, data are gathered and organized, and reasonable conclusions are drawn.</i> CFS	
1. Ask questions and formulate hypotheses about objects, events, and organisms that can be tested through scientific investigation.	All STC units
2. Observe and describe changes in terms of starting conditions, type of change, and ending conditions, using words, diagrams, or graphs (e.g., melting ice cubes, germinating seeds, burning candles).	O, W, LCB, S, C
3. Select and use instruments to collect, organize, and present data related to a scientific investigation (thermometers, timers, magnifiers, balances, microscopes, calculators, and computers).	O, W, SL, CM, S, C, BW
4. Gather data from investigation by applying a variety of scientific skills (e.g., measurement, reading, recording methods).	All STC units
5. Organize observations and measurements into charts and graphs and communicate conclusions orally and in writing.	O, W, SL, CM, C, BW
6. Use data based on observations from guided experiments to construct reasonable and accurate explanations.	All STC units

7. Compare observations of individual and group results	All STC units
<p>CAS C. Understand and apply the concepts, principles, and processes of technological design.</p> <p>CFS</p> <ol style="list-style-type: none"> 1. Use appropriate vocabulary to describe scientific phenomena and instrumentation. 2. Plan and construct simple physical structures to solve specific technological challenges (e.g., blocks to build bridges, towers from drinking straws). 	<p>All STC units</p> <p>W, CM, BW</p>
<p>STATE GOAL 12: Have a working knowledge of the fundamental concepts and principles of the life, physical, and earth/space sciences and their connection.</p>	
Academic Standards	STC unit(s)
<p>CAS A. Compare and describe life cycles, basic needs, characteristics, and component parts of organisms.</p> <p>CFS</p> <ol style="list-style-type: none"> 1. Compare living things to non-living things; classify living things as plants or animals. 2. Describe stages in the life cycles of plants, insects, and vertebrates (e.g., bean plant, butterfly, frog). 3. Describe basic needs characteristics of living things (e.g., food, water, air, shelter, space). 	<p>O, LCB</p> <p>LCB</p> <p>O, LCB, S</p>
<p>CAS B. Understand effects of organisms on the environment and some features that help them survive and reproduce after a change in their environment.</p> <p>CFS</p> <ol style="list-style-type: none"> 1. Describe ways that offspring are much like their parents and one another. 2. Identify differences in appearance among individuals of the same population or group (e.g., hair color, eye color, height, hair texture). 3. Identify factors that affect animal and plant growth and reproduction (e.g., food, water, sunlight, fertile soil). 4. Compare plant and animal adaptations to the changing seasons (e.g., dropping leaves, migration, growing thicker coats). 5. Describe relationships among various organisms in their environment (e.g., predator/prey, parasite/host, food chains and webs). 6. Describe food webs in selected ecosystems (e.g., forest, desert, ocean). 	<p>O, LCB</p> <p>O, LCB</p> <p>O, LCB, S</p> <p>E*</p> <p>E*</p>
<p>CAS C. Describe and compare the properties and interactions of matter and energy.</p> <p>CFS</p> <ol style="list-style-type: none"> 1. Compare solids, liquids, and gases and describe how some change from one state to the other. 2. Examine, describe, classify and compare large-scale physical properties of matter (e.g., size, shape, color, texture, odor, flexibility, state of matter). 3. Discriminate among a variety of natural and man-made sounds. 	<p>W, SL, C</p> <p>All STC units</p>

4. Explain and demonstrate ways that heat and light are produced.	C
CAS D. Investigate, explain, and demonstrate characteristics of forces and motion. CFS 1. Compare and contrast an action and reaction in the behavior of objects. 2. Describe how a push or pull may affect the motion of objects. 3. Compare forces using various tools.	SL, CM SL, CM
CAS E. Investigate, describe and compare properties of Earth's basic materials (water, air, rock), and the natural processes that change the earth's surface. CFS 1. Identify major sources and uses of water. 2. Identify major sources of rock and its uses. 3. Identify ways in which the earth's surface is changed by the weather.	W, SL, C RM*
CAS F. Name and describe the main bodies of the solar system and their relationships. CFS 1. Describe how shadows change throughout the day and year in relation to the position of Earth and sun. 2. Describe motions of Earth in relation to the sun.	MT* MT*, MT DD*
STATE GOAL 13: Have a working knowledge of the relationships among science, technology, and society in historical and contemporary contexts.	
Academic Standards	STC unit(s)
CAS A. Identify and describe major technological changes and their effects on people, tools, and nature. CFS 1. Describe ways that technology is helping to solve the problems of pollution (e.g., water treatment, recycling). 2. List and categorize simple machines that make work easier. 3. Distinguish between natural objects and objects made by humans. 4. Compare the transportation and communications systems of the present to those of the past in terms of factors such as quality, efficiency, and speed.	SL O, W MD*, MD DD*
CAS B. Demonstrate understanding of conservation and the need to protect renewable and non-renewable natural resources. CFS 1. List causes of pollution and how to prevent them. 2. Demonstrate conservation practices for renewable resources (e.g., reducing, reusing, recycling).	SL SL, S
CAS C. Describe historical roles of people and societies in the development of current scientific knowledge. CFS 1. Read about and describe science-related careers and avocations.	All STC units

2. Read about and describe contributions of both male and female scientists, including those with physical disabilities, from a wide variety of cultures.	All STC units
CAS D. Students follow basic safety rules. CFS	
1. Explain the need for order, cleanliness, and safe practices during an experiment.	W, SL, C
2. Describe safety hazards associated with laboratory investigations. (e.g., no tasting of any chemicals).	W, SL, C

Grade Two

STATE GOAL 11: Have a working knowledge of the processes of scientific inquiry and technological design to investigate questions, conduct experiments, and solve problems.	
Academic Standards	STC unit(s)
CAS A. Understand that science involves asking and answering questions and comparing experimental results to what is already known. CFS	
1. Conduct simple experiments and observe and explain what was discovered.	All STC units
2. Demonstrate how repeated observations improve confidence in results.	BW
3. Describe conditions that influence change during an investigation (e.g., independent and dependent variables).	
4. Explain why similar results are expected when an experiment is repeated under the same conditions.	CT
5. Identify reasons why similar investigations may not always have the same results.	CT
6. Explain why scientists make the processes and results of their investigations public (e.g., so that others can repeat them and review and question their results).	SL, CM, S, C, BW, PGD, RM, CT, So
7. Describe and compare components and interrelationships of simple systems (e.g., lever and fulcrum, balloon).	BW, So
8. Read and discuss science-related materials from a variety of sources.	All STC units
CAS B. Design and conduct simple scientific investigations in which observations are made, data are gathered and organized, and reasonable conclusions are drawn. CFS	
1. Ask questions and formulate hypotheses about objects, events, and organisms that can be tested through scientific investigation.	All STC units
2. Observe and describe changes in terms of starting conditions, type of change, and ending conditions, using words, diagrams, or graphs (e.g., melting ice cubes, germinating seeds, burning candles).	O, W, LCB, S, C, PGD, CT
3. Select and use instruments to collect, organize, and present data related to a scientific investigation	O, W, SL, CM, S, C, BW, RM, CT

<p>(thermometers, timers, magnifiers, balances, microscopes, calculators, and computers).</p> <ol style="list-style-type: none"> Gather data from investigations by applying a variety of scientific skills (e.g., measurement, reading, recording methods). Organize observations and measurements into charts and graphs and communicate conclusions orally and in writing. Use data based on observations from guided experiments to construct reasonable and accurate explanations. Compare observations of individual and group results. 	<p>All STC units</p> <p>O, W, SL, CM, C, BW, PGD, RM, CT, So</p> <p>All STC units</p> <p>All STC units</p>
<p><i>CAS C. Understand and apply the concepts, principles, and processes of technological design.</i> CFS</p> <ol style="list-style-type: none"> Use appropriate vocabulary to describe scientific phenomena and instrumentation. Plan and construct simple physical structures to solve specific technological challenges (e.g., blocks to build bridges, towers from drinking straws). 	<p>All STC units</p> <p>W, CM, BW, So</p>
<p>STATE GOAL 12: Have a working knowledge of the fundamental concepts and principles of the life, physical, and earth/space sciences and their connection.</p>	
<p>Academic Standards</p>	<p>STC unit(s)</p>
<p><i>CAS A. Compare and describe life cycles, basic needs, characteristics, and component parts of organisms.</i> CFS</p> <ol style="list-style-type: none"> Compare living things to non-living things; classify living things as plants or animals. Describe stages in the life cycles of plants, insects, and vertebrates (e.g., bean plant, butterfly, frog). Describe how plants and animals obtain energy and raw materials (e.g., producers and consumers). Classify a variety of organisms according to selected characteristics (e.g., appendages, bones, body coverings, hatched from eggs/born alive, how they care for their young). 	<p>O, LCB, S, PGD</p> <p>LCB, PGD</p> <p>LCB, S, PGD</p> <p>O, LCB</p>
<p><i>CAS B. Understand effects of organisms on the environment and some features that help them survive and reproduce after a change in their environment.</i> CFS</p> <ol style="list-style-type: none"> Describe ways that offspring are much like their parents and one another. Identify differences in appearance among individuals of the same population or group. Identify factors that affect animal and plant growth and reproduction. Describe relationships among various organisms in their environment (e.g., predator/prey, parasite/host, food chains and webs). Describe ways in which organisms cause changes in their environments. 	<p>O, LCB, PGD</p> <p>O, LCB, PGD</p> <p>O, LCB, PGD</p> <p>PGD</p> <p>O, LCB, S, PGD</p>

<p>6. Describe characteristics of plants and animals that allow them to live in specific environments (e.g., blubber in seals and whales, taproots in dry environments).</p> <p>7. Describe food webs in selected ecosystems.</p> <p>8. Describe examples of extinct organisms based on fossil evidence (e.g., dinosaurs).</p>	<p>LCB</p> <p>E*</p> <p>E DD*</p>
<p><i>CAS C. Describe and compare the properties and interactions of matter and energy.</i></p> <p>CFS</p> <p>1. Examine, describe, classify, and compare large-scale physical properties of matter (e.g., size, shape, color, texture, odor, flexibility, state of matter).</p> <p>2. Measure common physical properties of objects (e.g., length, mass, volume, temperature).</p> <p>3. Demonstrate that objects can be made of one or more materials.</p> <p>4. Describe and demonstrate the construction and operation of electrical circuits.</p>	<p>All STC units</p> <p>W, CM, BW, PGD, So</p> <p>SL, S, CT</p> <p>EC*</p>
<p><i>CAS D. Investigate, explain, and demonstrate characteristics of forces and motion.</i></p> <p>CFS</p> <p>1. Compare and contrast an action and reaction in the behavior of objects.</p> <p>2. Describe how a push or pull may affect the motion of objects.</p> <p>3. Compare forces using various tools.</p> <p>4. Describe how gravity affects motion.</p> <p>5. Demonstrate that a magnet has a magnetic field and that magnets attract and repel.</p> <p>6. Demonstrate interactions between positively and negatively charged objects.</p> <p>7. Distinguish between objects that do and do not interact magnetically; distinguish between objects that do and do not interact electrically.</p>	<p>SL, CM, So</p> <p>SL, CM, So</p> <p>MD*, MD DD*</p> <p>SL, RM</p> <p>SL, RM (magnetic interactions only)</p>
<p><i>CAS E. Investigate, describe and compare properties of Earth's basic materials (water, air, rock), and the natural processes that change the earth's surface.</i></p> <p>CFS</p> <p>1. Describe different types and uses of Earth's rocks, soils, and minerals.</p> <p>2. Identify major sources and uses of water.</p> <p>3. Identify the major components of air.</p> <p>4. Identify ways that Earth's surface is influenced by weather.</p>	<p>S, RM</p> <p>W, SL, C, PGD</p> <p>E*</p> <p>LW DD*</p>
<p><i>CAS F. Name and describe the main bodies of the solar system and their relationships.</i></p> <p>CFS</p> <p>1. Describe size, distances, and relationships among major bodies of our solar system.</p> <p>2. Describe the dependence of the earth upon the sun for heat and light energy.</p> <p>3. Identify major constellations in the night sky.</p>	<p>W</p>

4. Describe how shadows change throughout the day and year in relation to the position of Earth and sun.	MT*, MT DD*
5. Describe motions of Earth in relation to the sun in determining day, night, year, and the seasons.	MT*, MT DD*
STATE GOAL 13: Have a working knowledge of the relationships among science, technology, and society in historical and contemporary contexts.	
Academic Standards	STC unit(s)
<i>CAS A. Identify and describe major technological changes and their effects on people, tools, and nature.</i> CFS 1. Describe ways that technology is helping to solve the problems of pollution (e.g., water treatment, recycling). 2. Identify examples of disruption of food webs by modern technology and implications of such interruptions. 3. Compare ancient and modern time-measuring devices from various countries (e.g., sundials, constellations). 4. Compare the transportation and communication systems of the present to those of the past in terms of factors such as quality, efficiency, and speed.	SL E*, E DD* MT*, MT DD* MD*, MD DD*
<i>CAS B. Demonstrate understanding of conservation and the need to protect renewable and non-renewable natural resources.</i> CFS 1. List causes of pollution and how it affects plant and animal life. 2. Investigate, develop, and demonstrate conservation practices for renewable resources (e.g., reducing, reusing, recycling, replanting trees).	SL SL, S
<i>CAS C. Describe historical roles of people and societies in the development of current scientific knowledge.</i> CFS 1. Read about and describe science-related careers and avocations. 2. Read about and describe contributions of both male and female scientists, including those with physical disabilities, from a wide variety of cultures.	All STC units All STC units
<i>CAS D. Follow basic safety rules.</i> CFS 1. Explain the need for order, cleanliness, and safe practices during an experiment. 2. Describe safety hazards associated with laboratory investigation (e.g., no tasting of any chemicals).	W, SL, C, RM, CT, So W, SL, C, RM, CT, So

Grade Three

STATE GOAL 11: Have a working knowledge of the processes of scientific inquiry and technological design to investigate questions, conduct experiments, and solve problems.	
Academic Standards	STC unit(s)
<i>CAS A. Understand that science involves asking and answering questions and comparing experimental results to what is already known.</i>	

<p>CFS</p> <ol style="list-style-type: none"> 1. Conduct experiments and observe and explain what was discovered. 2. Demonstrate how repeated observations improve confidence in results. 3. Describe conditions that influence change during an investigation (e.g., independent and dependent variables). 4. Explain why similar results are expected when an experiment is repeated under the same conditions. 5. Identify reasons why similar investigations may not always have the same results. 6. Explain why scientists make the processes and results of their investigations public (e.g., so that others can repeat them and review and question their results). 7. Describe and compare components and interrelationships of a simple system (e.g., skeletal system, simple electrical circuit). 8. Read and discuss science-related materials from a variety of sources. 	<p>All STC units</p> <p>All STC units</p> <p>CT</p> <p>CT, AS, LW, MD</p> <p>SL, CM, S, C, BW, PGD, RM, CT, So, AS, LW, EC</p> <p>BW, So, LW, EC, MD</p> <p>All STC units and Discovery Decks</p>
<p><i>CAS B. Design and conduct simple scientific investigations in which observations are made, data are gathered and organized, and reasonable conclusions are drawn.</i></p> <p>CFS</p> <ol style="list-style-type: none"> 1. Ask questions and formulate hypotheses about objects, events, and organisms that can be tested through scientific investigation. 2. Observe and describe changes in terms of starting conditions, types of changes, and ending conditions, using words, diagrams, or graphs (e.g., melting ice cubes, germinating seeds, burning candles). 3. Select and use instruments to collect, organize, and present data related to a scientific investigation (thermometers, timers, magnifiers, balances, microscopes, calculators, and computers). 4. Gather data from investigation by applying a variety of scientific skills (e.g., measurement, manipulation, reading, recording methods). 5. Organize observations and measurements into charts and graphs and communicate conclusions orally and in writing. Use data based on observations from guided experiments to construct reasonable and accurate explanations. 6. Interpret data and evaluate the accuracy of the outcomes or solutions (e.g., repeated trials improve accuracy). 7. Compare observations of individual and group results. 	<p>All STC units</p> <p>LCB, S, C, PGD, CT, AS, LW, MD</p> <p>S, C, BW, RM, CT, AS, LW, MD</p> <p>All STC units</p> <p>C, BW, PGD, RM, CT, So, AS, LW, EC, MD</p> <p>MD</p> <p>All STC units</p>
<p><i>CAS C. Understand and apply the concepts, principles, and processes of technological design.</i></p> <p>CFS</p> <ol style="list-style-type: none"> 1. Use appropriate vocabulary to describe scientific phenomena and instrumentation. 2. Discuss and design several possible solutions to a given problem. 	<p>All STC units</p> <p>So, LW, EC, MD</p>

<ol style="list-style-type: none"> 3. Construct simple models that illustrate concepts and compare those models to what they represent (e.g., compare a balloon rocket to actual rocket, dolls to humans). 4. Create a prototype of a device using materials and tools provided; record and describe the results using appropriate instruments, techniques, and measurement methods. 5. Report the design, test process, and results in solving a given problem. 	<p>LCB, BW, PGD, So, LW, EC, MD</p> <p>So, LW, EC, MD</p> <p>S, C, PGD, CT, So, AS, LW, EC, MD</p>
STATE GOAL 12: Have a working knowledge of the fundamental concepts and principles of the life, physical, and earth/space sciences and their connection.	
Academic Standards	STC unit(s)
<p><i>CAS A. Compare and describe life cycles, basic needs, characteristics, and component parts of organisms.</i> CFS</p> <ol style="list-style-type: none"> 1. Describe how plants and animals obtain energy and raw materials (e.g., producers and consumers). 2. Describe organs and functions of major human body systems (e.g., digestive, respiratory, circulatory, skeletal, muscular). 3. Describe basic food requirements of humans. 	<p>LCB, S, PGD, AS, AS DD</p> <p>FC*, FC DD*</p>
<p><i>CAS B. Understand effects of organisms on the environment and some features that help them survive and reproduce after a change in their environment.</i> CFS</p> <ol style="list-style-type: none"> 1. Identify differences in appearance among individuals of the same population or group. 2. Identify factors that affect animal and plant growth and reproduction (e.g., social and/or chemical stimulation). 3. Describe living and non-living relationships between organisms in their environment (e.g., predator/prey, habitat, weather). 4. Describe characteristics of plants and animals that allow them to live in specific environments (e.g., seed coats, waxy stems, webbed feet). 5. Describe food webs in selected ecosystems. 	<p>LCB, PGD, AS, AS DD</p> <p>LCB, PGD, AS, AS DD</p> <p>LCB, PGD, AS, AS DD</p> <p>LCB, AS, AS DD</p> <p>E*</p>
<p><i>CAS C. Describe and compare the properties and interactions of matter and energy.</i> CFS</p> <ol style="list-style-type: none"> 1. Describe and compare how energy in different forms affects common objects and is involved in common events (e.g., combustion, electrical conduction). 	<p>EC, EC DD, MD, MD DD</p>
<p><i>CAS D. Investigate, explain, and demonstrate characteristics of forces and motion.</i> CFS</p> <ol style="list-style-type: none"> 1. Compare and contrast an action and reaction in the behavior of objects. 2. Describe relations between force and motion to explain the operation of simple machines. 	<p>BW, So, MD</p>

<p>CAS E. Investigate, describe and compare properties of Earth’s basic materials (water, air, rock), and the natural processes that change the earth’s surface. CFS</p> <ol style="list-style-type: none"> 1. Describe different types and uses of the earth’s rocks, soils, and minerals. 2. Identify the earth’s renewable and non-renewable resources around the world (e.g., Mideast oil, Illinois coal, southeastern U.S. pine lumber, native trees of Hawaii). 3. Identify and describe the three main rock types and how they are related. 4. List properties, stages of formation, and effects of soil types on plant growth. 5. Describe causes and effects of natural events on the earth’s surface (e.g., earthquakes, volcanoes, and floods). 6. Describe changes on the earth’s surface over time (e.g., erosion, mountain building). 7. Illustrate and describe cycles in nature (e.g. water, CO₂/O₂). 8. Identify the major components of air and describe their importance. 9. Identify ways that Earth’s surface influences weather (e.g., evaporation from oceans, condensation due to mountains). 	<p>S, RM, LW, LW DD</p> <p>RM</p> <p>S</p> <p>RM, LW, LW DD</p> <p>RM, LW, LW DD</p> <p>LW, LW DD</p> <p>E DD*</p>
<p>CAS F. Name and describe the main bodies of the solar system and their relationships. CFS</p> <ol style="list-style-type: none"> 1. Describe probable surface conditions and composition of the planets. 2. Discuss the impact of the asteroids and meteors on the surface appearance of planets. 3. Describe evidence for and the consequences of liquid water being present on other bodies in the solar system. 	
<p>STATE GOAL 13: Have a working knowledge of the relationships among science, technology, and society in historical and contemporary contexts.</p>	
<p>Academic Standards</p>	<p>STC unit(s)</p>
<p>CAS A. Identify and describe major technological changes and their effects on people, tools, and nature. CFS</p> <ol style="list-style-type: none"> 1. Describe ways that technology is helping to solve the problems of pollution (e.g., water treatment, recycling). 2. Describe effects that technology can have on various environments around the world (e.g., greenhouse effect, replacing CFC’s). 3. Identify examples of the disruption of food webs by modern technology and the implications of such interruptions (e.g., draining wetlands, ozone depletion). 	<p>LW, LW DD, EC DD</p> <p>AS DD, LW, LW DD, EC DD</p> <p>AS DD, LW DD</p>
<p>CAS B. Demonstrate understanding of conservation and the need to protect renewable and non-renewable natural resources. CFS</p> <ol style="list-style-type: none"> 1. List causes of pollution, its effects on plant and animal life, and possible ways of reducing or preventing it. 	<p>AS DD, LW DD</p>

2. Investigate, develop, and demonstrate conservation practices for renewable resources (e.g., reducing, reusing, recycling, replanting trees).	S, LW, EC DD
<i>CAS C. Describe historical roles of people and societies in the development of current scientific knowledge.</i> CFS 1. Read about and describe science-related careers and avocations. 2. Read about and describe contributions of both male and female scientists, including those with physical disabilities, from a wide variety of cultures.	All STC units and Discovery Decks All STC units and Discovery Decks
<i>CAS D. Follow basic safety rules.</i> CFS 1. Explain the need for order, cleanliness, and safe practices during an experiment. 2. Describe safety hazards associated with laboratory investigation. (e.g., fire, poisons, caustic chemicals).	C, RM, CT, So, AS, LW, EC, MD C, RM, CT, So, EC, MD

Grade Four

STATE GOAL 11: Have a working knowledge of the processes of scientific inquiry and technological design to investigate questions, conduct experiments, and solve problems.	
Academic Standards	STC unit(s)
<i>CAS A. Identify problems and derive solutions to demonstrate an understanding of the processes of scientific investigation.</i> CFS 1. Explain why similar investigations may not produce similar results. 2. Illustrate that scientific investigations sometimes result in unexpected findings that lead to new questions and more investigations. 3. Explain why keeping accurate and detailed records is important. 4. Conduct a literature search with appropriate sources on an assigned topic. 5. Synthesize textual resources to solve problems.	CT, AS, LW, MD, Mw, FC, FS AS, LW, EC, MD, Mw, E, FC, FS All STC units PGD, RM, CT, So, AS, LW, MD, Mw, E, FC, FS E
<i>CAS B. Design and safely conduct scientific investigations to answer questions and test the validity of predictions: making observations, describing procedures, organizing data, drawing reasonable conclusions, and interpreting results.</i> CFS 1. Formulate appropriate questions to acquire information about objects, organisms, and events in the environment. 2. State a hypothesis, identify the independent and dependent variables, and devise an appropriate experimental design to test the hypothesis. 3. Conduct experiments that require repeated trials using the skills of observation, classification, prediction, and communication of results (e.g., collect data from class	All STC units EP*, MT*, MM*, TP* MD, E, FC, FS

<p>members and/or have individual students repeat the investigation multiple times).</p> <ol style="list-style-type: none"> 4. Demonstrate skill in using scientific instruments and technology to obtain different levels of precision (e.g., triple beam and electronic balances, graduated cylinders, sieves, stereoscopes, timers, electric meters, calculators, computers). 5. Use a variety of techniques to gather and display scientific data derived from individual and collaborative investigations (e.g., test, interview, survey). 6. Use metric units (Standard International Units and conventions) in measuring, calculating, and reporting results. 7. Identify patterns and relationships that suggest cause and effect or support inferences and hypotheses. 8. Differentiate observations from inferences (e.g., falling objects, gravity). 9. Evaluate conflicting data from repeated trials of an investigation and determine sources of error. 	<p>Compatible with all STC units</p> <p>All STC units</p> <p>PGD, So, AS, LW, MD, Mw, E</p> <p>AS, LW, EC, MD, E, FC, FS</p> <p>E, FC, FS</p>
<p><i>CAS C. Know and apply the concepts, principles, and processes of technological design.</i> CFS</p> <ol style="list-style-type: none"> 1. Use appropriate vocabulary to describe science phenomena and instruments. 2. Build models and describe how they illustrate or fail to illustrate features of the situation they are modeling. 3. Describe examples of how incomplete, inadequate, or inaccurate analysis of a technological problem has led to an unacceptable solution or one with costly unintended consequences. 	<p>All STC units</p> <p>PGD, So, LW, EC, MD, Mw, E, FS EC DD</p>
<p>STATE GOAL 12: Have a working knowledge of the fundamental concepts and principles of the life, physical, and earth/space sciences and their connection.</p>	
<p>Academic Standards</p>	<p>STC unit(s)</p>
<p><i>CAS A. Understand the general structure and function of cells in organisms.</i> CFS</p> <ol style="list-style-type: none"> 1. Explain how cells function as “building blocks” of organisms and describe their component structures (e.g., cell membrane, nucleus, cytoplasm, chloroplasts). 2. Identify structures and describe functions of the major organs of the human body, including the heart, lungs, liver, and kidneys. 	<p>Mw (identification of cells only)</p>
<p><i>CAS B. Compare and contrast organisms by their energy use, position in food webs, structures, and adaptations to different environments.</i> CFS</p> <ol style="list-style-type: none"> 1. Compare and contrast the moisture, temperature, and seasonal changes of various biomes. 2. Compare and contrast behavioral patterns and adaptations of organisms from diverse biomes. 	<p>AS, AS DD</p>

<p><i>CAS C. Observe, describe, classify, measure, and compare characteristics of matter and different kinds of energy (mechanical, electrical, magnetic, light, heat, chemical).</i> CFS</p> <ol style="list-style-type: none"> 1. Demonstrate that light travels in a straight line and can be reflected, refracted, or absorbed. 2. Demonstrate that heat can be produced in a variety of ways by using a variety of techniques (e.g., friction, electricity, metabolism). 3. Explain and demonstrate the use of insulators to prevent energy transfer. 	<p>Mw CT, EC EC, EC DD</p>
<p><i>CAS D. Demonstrate and explain changes in forces and motion.</i> CFS</p> <ol style="list-style-type: none"> 1. Describe how the human ear enhances the detection of sound. 2. Demonstrate and describe benefits of mechanical advantage using simple machines. 	<p>So MD DD</p>
<p><i>CAS E. Analyze natural cycles, interactions, and patterns in the earth's land, water, and atmospheric systems.</i> CFS</p> <ol style="list-style-type: none"> 1. Describe short- to long-term changes in the earth's climate, suggesting causative factors and outlining effects on biotic communities. 2. Discuss and evaluate evidence that human activities have long-term effects on global climate. 	<p>E DD</p>
<p><i>CAS F. Compare the composition, structure, and formation of celestial objects in space with those on the earth.</i> CFS</p> <ol style="list-style-type: none"> 1. Explain how planets change their position in the sky relative to the stars. 	
<p>STATE GOAL 13: Have a working knowledge of the relationships among science, technology, and society in historical and contemporary contexts.</p>	
<p>Academic Standards</p>	<p>STC unit(s)</p>
<p><i>CAS A. Investigate and present ways in which science and technology have changed the tools, careers, resource use, and productivity of society over the centuries.</i> CFS</p> <ol style="list-style-type: none"> 1. Describe scientific advances brought about by the space program that impact on daily life (e.g., micro-electronics, medicine). 2. Describe technological developments that have enabled scientists to observe phenomena beyond the capabilities of unaided human senses due to factors such as distance, location, and speed (e.g., microscope, radar). 	<p>LW DD, MD, MD DD, Mw, Mw DD, FS DD</p>
<p><i>CAS B. Demonstrate an understanding of the need for protecting, conserving, and efficiently utilizing renewable and nonrenewable natural resources.</i> CFS</p> <ol style="list-style-type: none"> 1. Describe changes in physical environments that result from human activity (e.g., irrigation, dams and levees, offshore drilling). 	<p>AS DD, LW, LW DD, E, E DD</p>

<ol style="list-style-type: none"> 2. Classify materials in terms of their environmental impact (e.g., biodegradability, recyclability). 3. Design solutions to selected pollution and environmental problems. 4. Compare energy usage in various regions of the world (e.g., industrial vs. agricultural). 5. Identify opportunities for energy conservation at home, in school, and in the community (e.g., automobiles vs. public transportation). 	<p>LW, E, E DD</p> <p>LW, EC DD</p>
<p><i>CAS C. Describe the historical roles of people and societies in the development of current scientific knowledge.</i> CFS</p> <ol style="list-style-type: none"> 1. Read about and describe science-related careers and avocations. 2. Identify and describe contributions of both male and female scientists, including those with physical disabilities, from a wide variety of cultures. 	<p>All STC units and Discovery Decks</p> <p>All STC units and Discovery Decks</p>
<p><i>CAS D. Demonstrate the ability to follow basic safety rules.</i> CFS</p> <ol style="list-style-type: none"> 1. Identify and take precautions to minimize safety hazards associated with laboratory investigations (e.g., wear safety goggles, wash hands). 	<p>RM, CT, So, EC, MD, Mw, E, FC</p>

Grade 5

STATE GOAL 11: Have a working knowledge of the processes of scientific inquiry and technological design to investigate questions, conduct experiments, and solve problems.	
Academic Standards	STC unit(s)
<p><i>CAS A. Identify problems and derive solutions to demonstrate an understanding of the processes of scientific investigation.</i> CFS</p> <ol style="list-style-type: none"> 1. Explain why similar investigations may not produce similar results. 2. Illustrate that scientific investigations sometimes result in unexpected findings that lead to new questions and more investigations. 3. Explain why keeping accurate and detailed records is important. 4. Conduct a literature search with appropriate sources on an assigned topic. 5. Synthesize textual resources to solve problems. 	<p>AS, LW, MD, Mw, FC, FS, MT, MM, TP</p> <p>AS, LW, EC, MD, Mw, E, FC, FS, EP, MT, MM, TP</p> <p>All STC units</p> <p>AS, LW, MD, Mw, E, FC, FS, EP, MT, MM, TP</p> <p>E</p>
<p><i>CAS B. Design and safely conduct scientific investigations to answer questions and test the validity of predictions: making observations, describing procedures, organizing data, drawing reasonable conclusions, and interpreting results.</i> CFS</p> <ol style="list-style-type: none"> 1. Formulate appropriate questions to acquire information about objects, organisms, and events in the environment. 2. State a hypothesis, identify the independent and dependent 	<p>All STC units</p> <p>EP, MT, MM, TP</p>

<p>variables, and devise an appropriate experimental design to test the hypothesis.</p> <ol style="list-style-type: none"> Conduct experiments that require repeated trials utilizing the skills of observation, classification, prediction, and communication of results (e.g., collect data from class members and/or have individual students repeat the investigation multiple times). Demonstrate skill in using scientific instruments and technology to obtain different levels of precision (e.g., triple beam and electronic balances, graduated cylinders, sieves, stereoscopes, timers, electric meters, calculators, computers). Use a variety of techniques to gather and display scientific data derived from individual and collaborative investigations (e.g., test, interview, survey). Use metric units (Standard International Units and conventions) in measuring, calculating, and reporting results. Identify patterns and relationships that suggest cause and effect or support inferences and hypotheses. Differentiate observations from inferences (e.g., tides and moon phases, gravitational attraction). Evaluate conflicting data from repeated trials of an investigation and determine sources of error. 	<p>MD, E, FC, FS, MT, MM</p> <p>Compatible with all STC units</p> <p>All STC units</p> <p>AS, LW, MD, Mw, E, EP, MT, TP</p> <p>AS, LW, EC, MD, E, FC, FS, EP, MT, MM, TP</p> <p>E, FC, FS, MT, MM</p>
<p><i>CAS C. Know and apply the concepts, principles, and processes of technological design.</i> CFS</p> <ol style="list-style-type: none"> Use appropriate vocabulary to describe science phenomena and instruments. Design and implement technological solutions to particular problems and describe the entire process, from problem identification to analysis of solution effectiveness. 	<p>All STC units</p> <p>MD, MT, MM, TP</p>
<p>STATE GOAL 12: Have a working knowledge of the fundamental concepts and principles of the life, physical, and earth/space sciences and their connection.</p>	
<p>Academic Standards</p>	<p>STC unit(s)</p>
<p><i>CAS A. Understand the general structure and function of cells in organisms.</i> CFS</p> <ol style="list-style-type: none"> Describe genetic and environmental influences on the features of organisms and how cells mediate these influences (e.g., with exposure to sun, melanin causes darkening of skin). Categorize features as either inherited or learned, and describe cellular roles in both processes (e.g., flower color or eye color is inherited; language is learned). Describe structures and functions of major levels of living systems, including cells, tissues, organs, organ systems, and organisms. 	<p>AS, AS DD, Mw, E, E DD, EP, EP DD (How cells mediate is not discussed.)</p> <p>AS, AS DD, Mw, E, E DD, EP, EP DD (Cellular roles are not discussed.)</p> <p>AS, AS DD, Mw, Mw DD, E, E DD, EP</p>

<p>4. Describe ways that multicellular organisms supply food and other materials to their cells (e.g., digestion, transport of nutrients by circulatory system).</p>	
<p>CAS B. Compare and contrast organisms by their energy use, position in food webs, structures, and adaptations to different environments. CFS</p> <ol style="list-style-type: none"> Using appropriate criteria, classify organisms into their major taxonomic groups, according to their position in a food web, and by their internal and external features. Describe how behaviors of organisms are influenced by internal and external cues (circulating hormone levels, lunar and/or day length impact on breeding). Debate theories explaining mass extinctions and cite evidence that supports each theory (e.g., asteroidal impacts, volcanism). 	<p>AS, AS DD, Mw, E, E DD, EP, EP DD, MM DD</p>
<p>CAS C. Observe, describe, classify, measure, and compare characteristics of matter and different kinds of energy (mechanical, electrical, magnetic, light, heat chemical). CFS</p> <ol style="list-style-type: none"> Demonstrate that light travels in a straight line and can be reflected, refracted, or absorbed (e.g., with mirrors, prisms, color filters). Separate components of a mixture (e.g., solubility, magnetic properties, densities). Demonstrate that electrical energy can be converted to light, heat, sound, and magnetic energy. Compare and demonstrate conduction, convection, and radiation of heat energy. Describe quantitatively the relationship between time and distance; mass and force (e.g., velocity, acceleration, momentum, potential energy, and kinetic energy). 	<p>Mw</p> <p>LW, TP</p> <p>EC, EC DD, MM, MM DD</p> <p>MD, MT, MM</p>
<p>CAS D. Demonstrate and explain changes in forces and motion. CFS</p> <ol style="list-style-type: none"> Describe thrust, weight, lift, and drag as factors in flight and discuss their relationships. Demonstrate Bernoulli's Principle. Relate Newton's Third Law of Motion to space flight. Distinguish among uniform, variable, and periodic motion. 	
<p>CAS E. Analyze natural cycles, interactions, and patterns in the earth's land, water, and atmospheric systems. CFS</p> <ol style="list-style-type: none"> Distinguish among evaporation, condensation, and precipitation phases of the water cycle. Describe how landforms affect the flow of water. Describe factors that influence weather and match cloud types to weather conditions. 	<p>LW, LW DD, E DD</p> <p>LW, LW DD</p>
<p>CAS F. Compare the composition, structure, and formation of celestial objects in space with those on Earth. CFS</p>	

<ol style="list-style-type: none"> 1. Explain how planets change their position in the sky relative to the stars. 2. Postulate changes in energy and environmental conditions that might lead to the development of life on currently abiotic planets. 	
STATE GOAL 13: Have a working knowledge of the relationships among science, technology, and society in historical and contemporary contexts.	
Academic Standards	STC unit(s)
<p><i>CAS A. Investigate and present ways in which science and technology have changed the tools, careers, resource use, and productivity of society over the centuries.</i> CFS</p> <ol style="list-style-type: none"> 1. Describe scientific advances brought about by the space program that impact daily life (e.g., miniature health monitoring devices). 2. Describe how science and technology have improved agriculture, transportation, health, and sanitation. 3. Describe technological developments that have enabled scientists to observe phenomena beyond the capabilities of unaided human senses due to factors such as distance, location, and speed (e.g., microscope, radiotelescope, radar). 	<p>LW, LW DD, EC, MD, MD DD, E, E DD, FC, FC DD, FS, FS DD, MM, MM DD, TP, TP DD LW DD, MD, MD DD, Mw, Mw DD, FS DD, MM DD</p>
<p><i>CAS B. Demonstrate an understanding of the need for protecting, conserving, and efficiently utilizing renewable and nonrenewable natural resources.</i> CFS</p> <ol style="list-style-type: none"> 1. Classify materials in terms of their environmental impact (biodegradability, recyclability). 2. Identify opportunities for energy conservation at home, in school, and in the community (e.g., automobiles vs. public transportation, recycling of aluminum cans). 3. Explain how technology affects perceptions of places and regions (e.g., how television and movies present images to billions of people around the world). 	<p>LW, EC DD, TP, TP DD</p>
<p><i>CAS C. Describe historical roles of people and societies in the development of current scientific knowledge.</i> CFS</p> <ol style="list-style-type: none"> 1. Read about and describe science-related careers and avocations. 2. Identify and describe contributions of both male and female scientists, including those with physical disabilities, from a wide variety of cultures. 	<p>All STC units and Discovery Decks All STC units and Discovery Decks</p>
<p><i>CAS D. Demonstrate the ability to follow basic safety rules.</i> CFS</p> <ol style="list-style-type: none"> 1. Identify and take precautions to minimize safety hazards associated with laboratory investigations (e.g., wear safety goggles, gloves, and aprons as needed). 	<p>EC, MD, Mw, E, FC, MT, MM</p>

Grade 6

STATE GOAL 11: Have a working knowledge of the processes of scientific inquiry and technological design to investigate questions, conduct experiments, and solve problems.	
Academic Standards	STC unit(s)
<p><i>CAS A. Identify problems and derive solutions to demonstrate an understanding of the processes of scientific investigation.</i> CFS</p> <ol style="list-style-type: none"> 1. Explain why similar investigations may not produce similar results. 2. Illustrate that scientific investigations sometimes result in unexpected findings that lead to new questions and more investigations. 3. Explain why keeping accurate and detailed records is important. 4. Conduct a literature search with appropriate sources on an assigned topic. 5. Synthesize textual resources to solve problems. 	<p>Mw, FC, FS, MT, MM, TP</p> <p>Mw, E, FC, FS, EP, MT, MM, TP</p> <p>All STC units</p> <p>Mw, E, FC, FS, EP, MT, MM, TP</p> <p>E</p>
<p><i>CAS B. Design and safely conduct scientific investigations to answer questions and test the validity of predictions: making observations, describing procedures, organizing data, drawing reasonable conclusions, and interpreting results.</i> CFS</p> <ol style="list-style-type: none"> 1. Formulate appropriate questions to acquire information about objects, organisms, and events in the environment. 2. State a hypothesis, identify the independent and dependent variables, and devise an appropriate experimental design to test the hypothesis. 3. Conduct experiments that require repeated trials utilizing the skills of observation, classification, prediction, and communication of results (e.g., collect data from class members and/or have individual students repeat the investigation multiple times). 4. Demonstrate skill in using scientific instruments and technology to obtain different levels of precision (e.g., triple beam and electronic balances, graduated cylinders, sieves, stereoscopes, timers, electric meters, calculators, computers). 5. Use a variety of techniques to gather and display scientific data derived from individual and collaborative investigations (e.g., test, interview, survey). 6. Use metric units (Standard International Units and conventions) in measuring, calculating, and reporting results. 7. Identify patterns and relationships that suggest cause and effect or support inferences and hypotheses. 8. Differentiate observations from inferences (e.g., plant tropisms, growth factors). 9. Evaluate conflicting data from repeated trials of an investigation and determine sources of error. 	<p>All STC units</p> <p>EP, MT, MM, TP</p> <p>E, FC, FS, MT, MM</p> <p>Compatible with all STC units</p> <p>All STC units</p> <p>Mw, E, EP, MT, TP</p> <p>AS, LW, EC, MD, E, FC, FS, EP, MT, MM, TP</p> <p>E, FC, FS, MT, MM</p>

<p>10. Evaluate the validity of an argument through presentation of data.</p> <p>11. Contrast relevant and irrelevant information in an investigation.</p>	E, FC, FS, EP, MT, MM, TP
<p>CAS C. Know and apply the concepts, principles, and processes of technological design.</p> <p>CFS</p> <p>1. Identify a design problem and propose possible solutions.</p> <p>2. Identify constraints; develop a plan and procedure to address a design problem.</p> <p>3. Demonstrate a prototype of a design using available tools and materials.</p> <p>4. Test the design using suitable materials, techniques, and quantitative measurements to record data.</p> <p>5. Present the design, the process, and the test results in oral and written forms.</p> <p>6. Use appropriate vocabulary to describe science phenomena and instruments.</p>	<p>FS, MT, TP</p> <p>FS, MT, TP</p> <p>FS, MT, TP</p> <p>FS, MT, TP</p> <p>FS, MT, TP</p> <p>All STC units</p>
<p>STATE GOAL 12: Have a working knowledge of the fundamental concepts and principles of the life, physical, and earth/space sciences and their connection.</p>	
<p>Academic Standards</p>	<p>STC unit(s)</p>
<p>CAS A. Understand the general structure and function of cells in organisms.</p> <p>CFS</p> <p>1. Describe the roles of DNA, genes, and chromosomes in transmitting traits from generation to generation.</p> <p>2. Describe how physical traits are inherited and transmitted from one generation to another through cellular chromosomes of DNA.</p> <p>3. Cite examples of selective breeding for particular traits in plants and animals (e.g., fruit trees, race horses).</p> <p>4. Categorize features as either inherited or learned (e.g., flower color or eye color is inherited; hunting behavior is learned).</p> <p>5. Compare respiration in plants with respiration of animals.</p> <p>6. Describe stimulus-response reactions in organisms (e.g., reflex response, salivation in response to food odors).</p>	<p>EP, EP DD</p> <p>Mw, E, E DD, EP, EP DD</p> <p>EP</p>
<p>CAS B. Compare and contrast organisms by their energy use, position in food webs, structures, and adaptations to different environments.</p> <p>CFS</p> <p>1. Describe interrelationships between organisms (e.g., predator/prey, parasite/host, mutualism, commensalism).</p> <p>2. Compare and contrast food webs within and among different biomes (e.g., grasslands, tundra, marine).</p> <p>3. Predict the consequences of disrupting a food web.</p> <p>4. Identify variables in environments that affect sizes and behaviors of populations (e.g., food, other resources, kind and number of organisms).</p> <p>5. Describe how fossils are used to determine patterns of evolution.</p>	<p>E, E DD, EP, EP DD</p> <p>E</p> <p>E</p> <p>E, EP</p>

<p>CAS C. Observe, describe, classify, measure, and compare characteristics of matter and different kinds of energy (mechanical, electrical, magnetic, light, heat, chemical). CFS</p> <ol style="list-style-type: none"> 1. Describe the major components of atoms and explain how they relate to chemical change. 2. Describe quantitatively the relation between time and distance, and mass and force (e.g., velocity, acceleration, momentum, potential energy, kinetic energy). 3. Describe, measure, and calculate the times, distances, masses, and forces of moving objects and their interactions within a system. 	<p>MT, MM</p> <p>MT, MM</p>
<p>CAS D. Demonstrate and explain changes in forces and motion. CFS</p> <ol style="list-style-type: none"> 1. Describe and represent an object's motion graphically according to its position, direction, and speed. 2. Describe the relationship of work to force and distance. 3. Describe (using words, diagrams, or graphs) and predict what changes and what remains unchanged when matter experiences an external influence. 	<p>MT, MM</p>
<p>CAS E. Analyze natural cycles, interactions, and patterns in the earth's land, water, and atmospheric systems. CFS</p> <ol style="list-style-type: none"> 1. Identify rocks by their physical characteristics and methods of formation. 2. Explain how the earth changes due to slow processes (e.g., continental drift), moderate processes, (e.g., glaciation), and rapid processes (e.g., landslides, volcanoes, earthquakes). 3. Describe the theory of plate tectonics and cite evidence for it. 4. Describe how seismographs and other measuring devices are used to detect the epicenter and magnitude of earthquakes. 5. Describe the composition of various types of rocks and soils. 6. Describe the composition and structure of layers of the earth and the atmosphere (e.g., core, mantle, crust). 7. Describe composition and texture of soils and how fertility and resistance to erosion are influenced by a variety of organisms and human impact. 8. Describe the relationship of solar energy from the sun to phenomena on Earth's surface (e.g., winds, ocean currents, water cycle, growth of plants). 	<p>RM*</p> <p>LW*, LW DD*</p> <p>LW DD*</p> <p>RM*, LW DD*</p> <p>LW DD*</p> <p>E, E DD</p> <p>E, E DD, EP</p>
<p>CAS F. Compare the composition, structure, and formation of celestial objects in space with those on Earth. CFS</p> <ol style="list-style-type: none"> 1. Describe the dependence of the life cycle of a star on its mass. 2. Compare the relative sizes, positions, and motions of bodies within and beyond the solar system. 3. Describe the theories of origin of the universe. 	<p>MT, MT DD (motion of sun and moon only)</p>

STATE GOAL 13: Have a working knowledge of the relationships among science, technology, and society in historical and contemporary contexts.	
Academic Standards	STC unit(s)
<p><i>CAS A. Investigate and present ways in which science and technology have changed the tools, careers, resource use, and productivity of society over the centuries.</i> CFS</p> <ol style="list-style-type: none"> 1. Describe technological factors that have led to the rapid increase of the human population (e.g., irrigation, water purification, medicine). 2. Explain how changes in transportation, communication, and other technologies affect the location of economic activities (e.g., shift from trains and boats to trucks has moved population centers). 3. Compare and contrast pure science and applied science (e.g., scientists propose explanations for questions about the natural world and engineers propose solutions relating to human problems, needs, and wants). 4. Analyze scientific milestones that have revolutionized thinking (e.g., theories of Copernicus, Newton, Darwin). 	Mw, Mw DD, EP DD, MT, MM
<p><i>CAS B. Demonstrate an understanding of the need for protecting, conserving, and efficiently utilizing renewable and nonrenewable natural resources.</i> CFS</p> <ol style="list-style-type: none"> 1. Identify opportunities for energy conservation at home, in school, and in the community (e.g., thermostats, insulation). 2. Describe how technology affects access to resources and their uses (e.g., mining and mineral extraction methods). 3. Explain how technology affects perceptions of places and regions (e.g., how television and movies present images to millions of people around the world). 	E E
<p><i>CAS C. Describe historical roles of people and societies in the development of current scientific knowledge.</i> CFS</p> <ol style="list-style-type: none"> 1. Read about and describe science-related careers and avocations. 2. Identify and describe contributions of both male and female scientists, including those with physical disabilities, from a wide variety of cultures. 	All STC units and Discovery Decks All STC units and Discovery Decks
<p><i>CAS D. Demonstrate the ability to follow basic safety rules.</i> CFS</p> <ol style="list-style-type: none"> 1. Identify and take precautions to minimize safety hazards associated with laboratory investigations (e.g., wear safety goggles, wash hands, wear protective clothing). 	Mw, E, FC, MT, MM