



CONNECTICUT
Content Standards and Expected Performances
Core Science for Grades 6-8
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OBJECTIVES	PAGE REFERENCES
Grade 6 Core Themes, Content Standards, and 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>SE: 64, 124, 404-405, 435-439, 441-447, 448-450 <i>Integrate Health</i> 452</p> <p>TWE: CUL 473 CUR 450 IL 476</p>
<p>C1. Describe the properties of common elements, such as oxygen, hydrogen, carbon, iron and aluminum.</p>	<p>SE: 436-439, 442-446, 448-449 <i>Lab</i> 453</p> <p>TWE: FF 444, 445 LD 439 MM 443 SJ 442</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>SE: 472-474, 477</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>SE: <i>Mini LAB</i> 124</p>

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<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>SE: 96-97, 98-105, 106-110 <i>Lab</i> 112-113 <i>Science and History</i> 114</p> <p>TWE: A 101 AS 110, 113 DI 97 TPK 106</p>
<p>C4. Describe how abiotic factors, such as temperature, water and sunlight, affect the ability of plants to create their own food through photosynthesis.</p>	<p>SE: 122-127, 135, 136 <i>National Geographic</i> 134</p> <p>TWE: AIL 140 DI 128</p>
<p>C 5. Explain how populations are affected by predator-prey relationships.</p>	<p>SE: 96, 100, 105, 110 <i>National Geographic</i> 104</p> <p>TWE: A 104</p>
<p>C 6. Describe common food webs in different Connecticut ecosystems.</p>	<p>The following examples are not specific to Connecticut ecosystems.</p> <p>SE: 106-107, 137-139, 156-157</p> <p>TWE: A 137 MM 108 VL 138</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>SE: 125-127, 614 <i>Integrate Earth Science</i> 128</p> <p>TWE: DIN 127</p>
<p>C 7. Describe the effect of heating on the movement of molecules in solids, liquids and gases.</p>	<p>SE: 612-614</p> <p>TWE: IL 613</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>SE: 127, 614 <i>Integrate Earth Science</i> 128 <i>Science and Society</i> 626</p> <p>TWE: QD 127</p>
<p>C 9. Explain how the uneven heating of the Earth's surface causes winds.</p>	<p>SE: 127, 614 <i>Integrate Earth Science</i> 128</p> <p>TWE: DIN 127</p>

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<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. 	SE: 130-131, 163-165 TWE: DIN 168 FYI 165 IM 131
<p>C 10. Explain the role of septic and sewage systems on the quality of surface and ground water.</p>	SE: <i>Science and Society</i> 172
<p>C 11. Explain how human activity may impact water resources in Connecticut, such as ponds, rivers and the Long Island Sound ecosystem.</p>	SE: 164-165 <i>Science and Society</i> 172 TWE: FYI 165
Grade 7 Core Themes, Content Standards and 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. 	SE: 580-584, 619 <i>Integrate Life Science</i> 589 <i>Lab</i> 585 TWE: QD 581 TPK 580
<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>	SE: 582 <i>Lab</i> 585 <i>Mini LAB</i> 583 TWE: AS 599 D 583 DIN 582
<p>C 13. Explain how simple machines, such as inclined planes, pulleys and levers, are used to create mechanical advantage.</p>	SE: 586-587, 591-597 <i>Lab</i> 598-599 TWE: FF 588 LD 594 SJ 592
<p>C 14. Describe how different types of stored (potential) energy can be used to make objects move.</p>	SE: 584 <i>Integrate Life Science</i> 589 TWE: QD 581 TPK 580

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<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>SE: 68, 70-71, 73-79, 704, 711-713 <i>Lab 72</i> <i>National Geographic 69</i></p> <p>TWE: A 711 FF 704 IL 68</p>
<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>SE: 68, 70 <i>Lab 72</i> <i>National Geographic 69</i></p> <p>TWE: FF 66 IL 68 LD 70</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>SE: 70-71, 73-79 <i>Lab 82-83</i> <i>Launch Lab 63</i> <i>Science Stats 84</i></p> <p>TWE: FF 77 FYI 75 QD 78</p>
<p>C 17. Explain how the human musculo-skeletal system supports the body and allows movement.</p>	<p>SE: <i>Science Stats 84</i></p> <p>TWE: D 84</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>SE: 182-188, 190-199, 210-211, 219-223, 226-231, 250-255, 285 <i>Lab 189, 225, 256</i></p>
<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>SE: 186-188, 190-199, 210-211, 226-231, 250-255, 285 <i>Lab 189, 232-233, 256</i> <i>National Geographic 253</i></p>
<p>C 19. Explain how glaciation, weathering and erosion create and shape valleys and floodplains.</p>	<p>SE: 184, 190-197, 210-211, 219-223, 226-231, 250-255, 285 <i>Lab 225, 256</i></p>

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<p>C 20. Explain how the boundaries of tectonic plates can be inferred from the location of earthquakes and volcanoes.</p>	<p>SE: 182-188, 190-192, 194-199, 210-211, 219-223, 226-231 <i>Lab</i> 189, 225, 256 <i>National Geographic</i> 193 TWE: D 229</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>SE: <i>Integrate Health</i> 505 <i>Integrate History</i> 75 TWE: A 504</p>
<p>C 21. Describe how freezing, dehydration, pickling and irradiation prevent food spoilage caused by microbes.</p>	<p>SE: 504 <i>Integrate Health</i> 505 TWE: A 504</p>
<p>Grade 8 Core Themes, Content Standards and Expected Performances</p>	
<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>SE: 522-527, 528-532, 550-553, 560-561 <i>Accidents in Science</i> 542 <i>Integrate History</i> 557 <i>Lab</i> 539 <i>Launch Lab</i> 521 TWE: A 526 FF 529</p>
<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>SE: 524-526, 528-532 <i>Lab</i> 570-571 TWE: A 526 D 527 DI 532 VL 525</p>
<p>C 23. Describe the qualitative relationships among force, mass and changes in motion.</p>	<p>SE: 533-536, 550-553, 556-559 <i>Lab</i> 539 <i>Launch Lab</i> 549 TWE: DI 562 DIN 561, 566 LD 567 VL 560</p>
<p>C 24. Describe the forces acting on an object moving in a circular path.</p>	<p>SE: 560-561, 568</p>

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<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>SE: 38-42, 44-48, 49-50, 52-53 <i>Lab 54-55</i> <i>National Geographic 51</i></p> <p>TWE: DI 48 IL 47 QD 45 TPK 44</p>
<p>C 25. Explain the similarities and differences in cell division in somatic and germ cells.</p>	<p>SE: 46-48 TWE: DI 48</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>SE: 46, 81</p>
<p>C 27. Describe how genetic information is organized in genes on chromosomes, and explain sex determination in humans.</p>	<p>SE: 38-39, 45-48 TWE: DIN 40 QD 45 TPK 38</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>SE: 309-311, 312-316, 336-337 <i>Integrate History 557</i> <i>Integrate Life Science 307</i> <i>Integrate Physics 340</i> <i>Launch Lab 305</i></p> <p>TWE: QD 315 SJ 313 VL 314</p>
<p>C 28. Explain the effect of gravity on the orbital movement of planets in the solar system.</p>	<p>SE: 336-338 <i>Integrate History 557</i> <i>Integrate Physics 340</i></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>SE: 309-311, 312-316 <i>Integrate Life Science 307</i> <i>Lab 321</i> <i>Launch Lab 305</i></p> <p>TWE: LD 316 QD 315 SJ 313 VL 314</p>

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<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>SE: 217 <i>Science and History</i> 234</p> <p>TWE: DI 217</p>
<p>C 30. Explain how beam, truss and suspension bridges are designed to withstand the forces that act on them.</p>	<p>SE: 217 TWE: DI 217</p>

Codes Used for TWE Pages

A	Activity
AIL	Alternative Inquiry Lab
AS	Assessment
CUL	Cultural Diversity
CUR	Curriculum Connection
D	Discussion
DI	Daily Intervention
DIN	Differentiated Instruction
FF	Fun Fact
FYI	Teacher FYI
IL	Inquiry Lab
IM	Identifying Misconceptions
LD	Lab Demonstration
MM	Make a Model
QD	Quick Demo
SJ	Science Journal
TPK	Tie to Prior Knowledge
VL	Visual Learning