



CONNECTICUT
Content Standards and Expected Performances
Core Science for Grades 6-8
Science Level Green © 2005

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: 30-34, 36-40, 41-47, 58, 64-65, 246-251, 620-626 <i>Integrate Environment</i> 627</p> <p>TWE: DIN 623 QD 249</p>
<p>C1. Describe the properties of common elements, such as oxygen, hydrogen, carbon, iron and aluminum.</p>	<p>SE: 34, 45, 91, 166, 247, 255, 262-263, 549 <i>Reference Handbooks</i> 800-801</p> <p>TWE: FYI 264</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: 30, 75, 248-249, 597 <i>Integrate Physics</i> 253</p> <p>TWE: LD 596</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: 621-625</p> <p>TWE: FF 624 VL 249, 621</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>SE: 532-537, 539-543, 544-549 <i>Lab</i> 538, 550-551 <i>Launch Lab</i> 531</p> <p>TWE: DI 549 FYI 533</p>

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C4. Describe how abiotic factors, such as temperature, water and sunlight, affect the ability of plants to create their own food through photosynthesis.	SE: 262, 532-534, 544 <i>Lab</i> 266-267, 550-551 TWE: TPK 544
C 5. Explain how populations are affected by predator-prey relationships.	SE: 543 <i>Applying Science</i> 546 <i>National Geographic</i> 545 TWE: D 543 DIN 542
C 6. Describe common food webs in different Connecticut ecosystems.	The following examples are not specific to Connecticut ecosystems. SE: 544, 546 <i>National Geographic</i> 545 TWE: IL 546
<i>Energy in the Earth's Systems – How do external and internal sources of energy affect the Earth's systems?</i> 6.3 - Variations in the amount of the sun's energy hitting the Earth's surface affect daily and seasonal weather patterns. ♦ 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.	SE: 99-107, 118, 122, 126, 132, 148-151, 156-157, 181-182 <i>National Geographic</i> 158-159 TWE: CUR 149 FYI 132
C 7. Describe the effect of heating on the movement of molecules in solids, liquids and gases.	SE: 652-656, 657-658, 662-664, 717 <i>National Geographic</i> 660 TWE: D 661 FYI 662 IM 659 LD 655
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.	SE: 106-107, 118-121, 124, 126-130, 132-133, 150-151 <i>National Geographic</i> 131, 158-159 TWE: CUR 149 FF 150
C 9. Explain how the uneven heating of the Earth's surface causes winds.	SE: 99-101, 103-107, 119, 132 <i>Integrate Physics</i> 150 <i>National Geographic</i> 131 TWE: D 100 DI 107 TC 88 TPK 99

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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. 	<p>SE: 574 <i>Integrate Chemistry</i> 548 <i>Integrate History</i> 654 <i>National Geographic</i> 636</p> <p>TWE: IM 548 VL 574</p>
<p>C 10. Explain the role of septic and sewage systems on the quality of surface and ground water.</p>	<p>SE: 574-576 TWE: DIN 575 SJ 574</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>	<p>SE: 569, 573-574, 635, 732-733 <i>Integrate History</i> 654 <i>National Geographic</i> 636</p> <p>TWE: A 534</p>
<p>Grade 7 Core Themes, Content Standards and Expected Performances</p>	
<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>SE: 443, 562-566, 717-720, 722-723, 725-727, 730-737 <i>Lab</i> 738-739 <i>National Geographic</i> 567, 724</p> <p>TWE: D 726 MM 732</p>
<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>See Glencoe's <i>Science Level Blue</i> © 2005</p> <p>SE: 582 <i>Lab</i> 585 <i>Mini LAB</i> 583</p> <p>TWE: AS 599 D 583 DIN 582</p>
<p>C 13. Explain how simple machines, such as inclined planes, pulleys and levers, are used to create mechanical advantage.</p>	<p>SE: <i>Integrate Physics</i> 440 <i>National Geographic</i> 441</p> <p>TWE: QD 442</p>
<p>C 14. Describe how different types of stored (potential) energy can be used to make objects move.</p>	<p>SE: 443, 562-566, 708, 716-718, 722-723, 732-737 <i>Lab</i> 738-739 <i>National Geographic</i> 724</p> <p>TWE: D 726 MM 732</p>

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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: 224-230, 254-258, 261-265, 276-282, 284-289 <i>Lab</i> 231, 260, 266-267, 283 <i>National Geographic</i> 259</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: 224-229, 254-258, 261-265, 278-282, 284-289 TWE: DIN 227 IL 226 MM 228</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: 371-376, 400-404, 412-415, 419-423 <i>Lab</i> 390-391 <i>Science and Society</i> 392 TWE: FF 373 FYI 374, 421 UA 409 VL 372</p>
<p>C 17. Explain how the human musculo-skeletal system supports the body and allows movement.</p>	<p>SE: 439, 442-443, 444-448 <i>Integrate Physics</i> 440 <i>National Geographic</i> 441 TWE: FYI 447 LD 440 MM 446 QD 445 TPK 444</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: 62-63, 72-73, 162, 575 <i>Integrate Physics</i> 61 <i>Launch Lab</i> 559 <i>National Geographic</i> 60 <i>Science and Society</i> 80 TWE: FYI 575 TC 56</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: 61, 69, 71 TWE: A 69</p>

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<p>C 19. Explain how glaciation, weathering and erosion create and shape valleys and floodplains.</p>	<p>SE: 575 <i>Integrate Physics</i> 61 <i>National Geographic</i> 60 TWE: FYI 575 TC 56</p>
<p>C 20. Explain how the boundaries of tectonic plates can be inferred from the location of earthquakes and volcanoes.</p>	<p>See Glencoe's <i>Science Level Blue</i> © 2005 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>This objective can be covered during class discussion with a local food science or public health representative.</p> <p>Also see Glencoe's <i>Science Level Blue</i> © 2005 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>This objective can be covered during class discussion with a local food science or public health representative.</p> <p>Also see Glencoe's <i>Science Level Blue</i> © 2005 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: 684-686, 690-693, 694-695 <i>Integrate Astronomy</i> 704 <i>Lab</i> 701, 706-707 <i>Mini LAB</i> 687 TWE: D 708 DIN 688</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: 685-686 <i>Mini LAB</i> 687 TWE: A 687</p>
<p>C 23. Describe the qualitative relationships among force, mass and changes in motion.</p>	<p>SE: 690-693, 694-695, 702-703 <i>Lab</i> 701, 706-707</p>

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<p>C 24. Describe the forces acting on an object moving in a circular path.</p>	<p>SE: 689 <i>Integrate Astronomy 704</i> TWE: D 708 DIN 688</p>
<p><i>Heredity and Evolution – What processes are responsible for life’s unity and diversity?</i> 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: 276-280, 284-287, 290-295, 306-312, 316-317 <i>Lab 313</i> TWE: D 315 DIN 310 QD 293 TPK 306</p>
<p>C 25. Explain the similarities and differences in cell division in somatic and germ cells.</p>	<p>SE: 276-280, 284-287 <i>Lab 283</i> <i>Mini LAB 281</i> TWE: DI 289 FF 278 FYI 279 QD 287 VL 281</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: 473-477, 479-483 <i>Lab 478</i> TWE: AS 477 D 474 SJ 475 USW 480</p>
<p>C 27. Describe how genetic information is organized in genes on chromosomes, and explain sex determination in humans.</p>	<p>SE: 290-295, 306-312, 316-318, 321-323 <i>Accidents in Science 298</i> <i>Lab 313</i> TWE: D 315 QD 293</p>
<p><i>Earth in the Solar System – How does the position of Earth in the solar system affect conditions on our planet?</i> 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: 178-183, 194-201, 696 <i>Integrate Astronomy 704</i> TWE: A 179 D 181 FYI 182, 696, 704 LD 180 TPK 178</p>
<p>C 28. Explain the effect of gravity on the orbital movement of planets in the solar system.</p>	<p>SE: 179, 696 <i>Integrate Astronomy 704</i> TWE: FYI 186, 696, 704</p>

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<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: 178-183, 186-190 <i>Lab</i> 202-203 TWE: A 179 D 181 FYI 182 LD 180 QD 187 TPK 178 VL 190</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>See Glencoe’s <i>Science Level Blue</i> © 2005 to stimulate discussion to meet this objective. SE: 217 <i>Science and History</i> 234 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>See Glencoe’s <i>Science Level Blue</i> © 2005 to stimulate discussion to meet this objective. SE: 217 TWE: DI 217</p>

Codes Used for TWE Pages

A	Activity
AS	Assessment
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
TC	Theme Connection
TPK	Tie to Prior Knowledge
UA	Use an Analogy
USW	Use Science Words
VL	Visual Learning