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

OBJECTIVES		PAGE REFERENCES
Grade 6 **Core Themes, Content Standards, and Expected Performances**		
Properties of Matter – How does the structure of matter affect the properties and uses of materials? **6.1 - Materials can be classified as pure substances or mixtures, depending on their chemical and physical properties.** ♦ 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.		SE: 113-117 *MiniLAB* 114 *Applying Science* 115 TWE: TPK 113 MM 114 QD 116 AIL 118
C1.	Describe the properties of common elements, such as oxygen, hydrogen, carbon, iron and aluminum.	SE: 106-111 *LAB* 112 TWE: A 107, 110 QD 110 CA 111
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.	SE: 114 *MiniLAB* 114 *LAB* 119 TWE: TPK 113
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.	SE: 116 *Applying Science* 115 TWE: DI 115 QD 116

OBJECTIVES	PAGE REFERENCES
Matter and Energy in Ecosystems – How do matter and energy flow through ecosystems? **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.** ♦ 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.	SE: 391, 620, 622-624, 633-634 *National Geographic* 393, 621 *MiniLAB* 623 *LAB* 626, 636 TWE: QD 624, 634 MM 634 R 635
C4. Describe how abiotic factors, such as temperature, water and sunlight, affect the ability of plants to create their own food through photosynthesis.	SE: 622-624 *MiniLAB* 623 *LAB* 626 TWE: QD 624 A 624 CU 625
C 5. Explain how populations are affected by predator-prey relationships.	SE: 630 TWE: D 630 FF 630 QD 631
C 6. Describe common food webs in different Connecticut ecosystems.	An expanded discussion of this objective can be based on: SE: 634 TWE: CU 635 These references are not limited to Connecticut ecosystems.
Energy in the Earth's Systems – How do external and internal sources of energy affect the Earth's systems? **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: 348-350, 354 TWE: LD 354 DI 361
C 7. Describe the effect of heating on the movement of molecules in solids, liquids and gases.	SE: 73-75 TWE: TFYI 73 VL 74 SJ 349
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: 348-350, 356-361 TWE: QD 349 A 350 DI 361

OBJECTIVES	PAGE REFERENCES
C 9. Explain how the uneven heating of the Earth's surface causes winds.	SE: 353-355 *Applying Math* 353 TWE: CD 353 TFYI 354 VL 354
Science and Technology in Society – How do science and technology affect the quality of our lives? **6.4** - **Water moving across and through earth materials carries with it the products of human activities.** ♦ Most precipitation that falls on Connecticut eventually reaches Long Island Sound.	Water runoff is discussed on the following pages: SE: 329-331 TWE: D 658
C 10. Explain the role of septic and sewage systems on the quality of surface and ground water.	SE: 658-659 TWE: TFYI 659 VL 659
C 11. Explain how human activity may impact water resources in Connecticut, such as ponds, rivers and the Long Island Sound ecosystem.	SE: 650-651, 658-659 *LAB* 654 TWE: VL 659
Grade 7 **Core Themes, Content Standards and Expected Performances**	
Energy Transfer and Transformations – What is the role of energy in our world? **7.1** - **Energy provides the ability to do work and can exist in many forms.** ♦ 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: 144-145, 166-168 *Applying Math* 145 *MiniLAB* 167 TWE: TFYI 166
C 12. Explain the relationship among force, distance and work, and use the relationship (W=F x D) to calculate work done in lifting heavy objects.	SE: 144-145 *Applying Math* 145
C 13. Explain how simple machines, such as inclined planes, pulleys and levers, are used to create mechanical advantage.	SE: 146-150 *MiniLAB* 147 TWE: D 146 A 148, 149 QD 149
C 14. Describe how different types of stored (potential) energy can be used to make objects move.	SE: 166-168 *MiniLAB* 167 TWE: TFYI 166 CA 169

OBJECTIVES	PAGE REFERENCES
Structure and Function – How are organisms structured to ensure efficiency and survival? **7.2 - Many organisms, including humans, have specialized organ systems that interact with each other to maintain dynamic internal balance.** ♦ 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.	SE: 476, 483-487 *LAB* 482 *MiniLAB* 484 *National Geographic* 486 TWE: IL 486 CA 487
C 15. Describe the basic structures of an animal cell, including nucleus, cytoplasm, mitochondria and cell membrane, and how they function to support life.	SE: 478-480 TWE: A 478 MM 478 VL 478 UA 479
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.	SE: 563-568 *MiniLAB* 569 TWE: TFYI 563, 564, 566 A 567 CD 567
C 17. Explain how the human musculo-skeletal system supports the body and allows movement.	SE: 560, 562 TWE: QD 561 TFYI 561 VL 562 LD 562
Energy in the Earth's Systems – How do external and internal sources of energy affect the Earth's systems? **7.3 - Landforms are the result of the interaction of constructive and destructive forces over time.** ♦ 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.	SE: 299-303, 323-331 *MiniLAB* 301 *National Geographic* 324 *Applying Science* 329 TWE: QD 300 MM 327, 329
C 18. Describe how folded and faulted rock layers provide evidence of the gradual up and down motion of the Earth's crust.	SE: 299-301 *MiniLAB* 301 TWE: QD 300 UA 300 SJ 300

OBJECTIVES	PAGE REFERENCES
C 19. Explain how glaciation, weathering and erosion create and shape valleys and floodplains.	SE: 323-331 *National Geographic* 324 *LAB* 323-333 TWE: MM 327, 329 SJ 329 AIL 333
C 20. Explain how the boundaries of tectonic plates can be inferred from the location of earthquakes and volcanoes.	SE: 292-297, 302-303 *National Geographic* 294
Science and Technology in Society – How do science and technology affect the quality of our lives? **7.4 - Technology allows us to improve food production and preservation, thus improving our ability to meet the nutritional needs of growing populations.** ♦ Various microbes compete with humans for the same sources of food.	This objective can be covered during class discussion with a local food science or public health representative. Also see Glencoe's *Science Level Blue* © 2005 SE: *Integrate Health* 505 *Integrate History* 75 TWE: A 504
C 21. Describe how freezing, dehydration, pickling and irradiation prevent food spoilage caused by microbes.	This objective can be covered during class discussion with a local food science or public health representative. Also see Glencoe's *Science Level Blue* © 2005 SE: 504 *Integrate Health* 505 TWE: A 504
Grade 8 **Core Themes, Content Standards and Expected Performances**	
Forces and Motion – What makes objects move the way they do? **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.** ♦ 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.	SE: 130-133, 136-137 *National Geographic* 142 *LAB* 151 TWE: QD 137 A 137 DI 142
C 22. Calculate the average speed of a moving object and illustrate the motion of objects in graphs of distance over time.	SE: 130-132, 135 *Applying Math* 131 TWE: A 133

OBJECTIVES	PAGE REFERENCES
C 23. Describe the qualitative relationships among force, mass and changes in motion.	SE: 136-143 *Applying Math* 140 *National Geographic* 142 *LAB* 151 TWE: QD 137 IM 140 IL 141 LD 141
C 24. Describe the forces acting on an object moving in a circular path.	SE: 417 *National Geographic* 142 TWE: DI 142
Heredity and Evolution – What processes are responsible for life's unity and diversity? **8.2 - Reproduction is a characteristic of living systems and it is essential for the continuation of every species.** ♦ 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.	SE: 599-605 *Applying Math* 603 *LAB* 606-607 *Science and Society* 608 TWE: D 600, 603 IM 602 AIL 607 A 608
C 25. Explain the similarities and differences in cell division in somatic and germ cells.	SE: 592, 594-595 *National Geographic* 596 TWE: TFYI 592 LD 594 DI 595
C 26. Describe the structure and function of the male and female human reproductive systems, including the process of egg and sperm production.	SE: 574-576 *National Geographic* 596 TWE: D 575 CC 575 TFYI 575 QD 576 DI 576
C 27. Describe how genetic information is organized in genes on chromosomes, and explain sex determination in humans.	SE: 590-591, 594-595, 600-602 TWE: VL 595 D 600 UA 602
Earth in the Solar System – How does the position of Earth in the solar system affect conditions on our planet? **8.3 - The solar system is composed of planets and other objects that orbit the sun.** ♦ 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.	SE: 417, 440-446 *MiniLAB* 421, 441 *LAB* 447 TWE: VL 443 A 443

OBJECTIVES	PAGE REFERENCES
C 28. Explain the effect of gravity on the orbital movement of planets in the solar system.	SE: 417 *MiniLAB* 421
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.	SE: 440-446 *MiniLAB* 441 *LAB* 447 TWE: TPK 440 IM 441 VL 443 A 443
Science and Technology in Society – How do science and technology affect the quality of our lives? **8.4 - In the design of structures there is a need to consider factors such as function, materials, safety, cost and appearance.** ♦ Bridges can be designed in different ways to withstand certain loads and potentially destructive forces.	Application to building design and earthquake forces is covered on page: TWE: DI 138 Also see See Glencoe's *Science Level Blue* © 2005 to stimulate discussion to meet this objective. SE: 217 *Science and History* 234 TWE: DI 217
C 30. Explain how beam, truss and suspension bridges are designed to withstand the forces that act on them.	Application to building design and earthquake forces is covered on page: TWE: DI 138 Also see Glencoe's *Science Level Blue* © 2005 to stimulate discussion to meet this objective. SE: 217 TWE: DI 217

Codes Used for TWE Pages

A	Activity
AIL	Alternative Inquiry Lab
CA	Check Assessment
CC	Curriculum Connection
CD	Cultural Diversity
CU	Check for Understanding
D	Discussion
DI	Differentiated Instruction
FF	Fun Fact
IL	Inquiry Lab
IM	Identifying Misconceptions
LD	Lab Demonstration
MM	Make a Model
QD	Quick Demo
R	Reteach
SJ	Science Journal
TFYI	Teacher FYI
TPK	Tie to Prior Knowledge
UA	Use an Analogy
VL	Visual Learning