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STANDARDS MAP:

Connecticut
Content Standards and Expected Performances for
Middle School Science, Grades 6–8

correlated to the

McDougal Littell Science
Matter and Energy Module ©2005

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Standards Map

Connecticut
Content Standards and Expected Performances
Middle School Science
Grade 6

Grades 6–8: ***Core Scientific Inquiry, Literacy and Numeracy***

How is scientific knowledge created and communicated?

C INQ1
Identify questions that can be answered through scientific investigation.

C INQ2
Read, interpret and examine the credibility of scientific claims in different sources of information.

C INQ3
Design and conduct appropriate types of scientific investigations to answer different questions.

C INQ4
Identify independent and dependent variables, and those variables that are kept constant, when designing an experiment.

C INQ5
Use appropriate tools and techniques to make observations and gather data.

C INQ6
Use mathematical operations to analyze and interpret the data.

C INQ7
Identify and present relationships between variables in appropriate graphs.

C INQ8
Draw conclusions and identify sources of error.

C INQ9
Provide explanations to investigated problems or questions.

C INQ10
Communicate about science in different formats, using relevant science vocabulary, supporting evidence and clear logic.

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.

6.1 (C 1)
Describe the properties of common elements such as oxygen, hydrogen, carbon, iron and aluminum.

6.1 (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.

6.1 (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.

Matter and Energy in Ecosystem: *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.

6.2 (C 4)
Describe how abiotic factors such as temperature, water and sunlight affect plants' ability to create their own food through photosynthesis.

6.2 (C 5)
Explain how populations are affected by predator-prey relationships.

6.2 (C 6)
Describe common food webs in different Connecticut ecosystems.

Energy in the Earth's Systems: *How do external and internal sources of energy affect the Earth's systems?*

6.3
Variation in the amount of the sun's energy hitting the Earth's surface affects daily and seasonal weather patterns.

6.3 (C 7)
Describe the effect of heating on the movement of molecules in solids, liquids and gases.

6.3 (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.

6.3 (C 9)
Explain how the uneven heating of the Earth's surface causes winds and affects the seasons.

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.

6.4 (C 10)
Explain the role of septic and sewage systems on the quality of surface and ground water sources.

6.4 (C 11)
Explain how human activity may impact water resources in Connecticut such as local ponds, rivers and the Long Island Sound ecosystem.

Connecticut
Content Standards and Expected Performances
Middle School Science
Grade 7

Grades 6–8: ***Core Scientific Inquiry, Literacy and Numeracy***

How is scientific knowledge created and communicated?

C INQ1
Identify questions that can be answered through scientific investigation.

C INQ2
Read, interpret and examine the credibility of scientific claims in different sources of information.

C INQ3
Design and conduct appropriate types of scientific investigations to answer different questions.

C INQ4
Identify independent and dependent variables, and those variables that are kept constant, when designing an experiment.

C INQ5
Use appropriate tools and techniques to make observations and gather data.

C INQ6
Use mathematical operations to analyze and interpret the data.

C INQ7
Identify and present relationships between variables in appropriate graphs.

C INQ8
Draw conclusions and identify sources of error.

C INQ9
Provide explanations to investigated problems or questions.

C INQ10
Communicate about science in different formats, using relevant science vocabulary, supporting evidence and clear logic.

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 it can exist in many forms.

7.1 (C 12)
Explain the relationship between force, distance and work, and use the relationship ($W=F \times D$) to calculate work done in lifting heavy objects.

7.1 (C 13)
Explain how simple machines such as inclined planes, pulleys and levers are used to create mechanical advantage.

7.1 (C 14)
Describe how different types of stored (*potential*) energy can be used to make objects move.

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.

7.2 (C 15)
Describe the basic structures of an animal cell, including nucleus, cytoplasm, mitochondria and cell membrane, and how they function to support life.

7.2 (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.

7.2 (C 17)
Explain how the human muscular/skeletal system supports the body and allows movement.

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.

7.3 (C 18)
Describe how folded and faulted rock layers provide evidence of the gradual up and down motion of the Earth's crust.

7.3 (C 19)
Explain how glaciation, weathering and erosion create and shape valleys and floodplains.

7.3 (C 20)
Explain how the boundaries of tectonic plates can be inferred from the location of earthquakes and volcanoes.

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.

7.4 (C 21)
Describe how freezing, dehydration, pickling and irradiation prevent food spoilage caused by bacteria.

Connecticut
Content Standards and Expected Performances
Middle School Science
Grade 8

Grades 6–8: ***Core Scientific Inquiry, Literacy and Numeracy***

How is scientific knowledge created and communicated?

C INQ1
Identify questions that can be answered through scientific investigation.

C INQ2
Read, interpret and examine the credibility of scientific claims in different sources of information.

C INQ3
Design and conduct appropriate types of scientific investigations to answer different questions.

C INQ4
Identify independent and dependent variables, and those variables that are kept constant, when designing an experiment.

C INQ5
Use appropriate tools and techniques to make observations and gather data.

C INQ6
Use mathematical operations to analyze and interpret the data.

C INQ7
Identify and present relationships between variables in appropriate graphs.

C INQ8
Draw conclusions and identify sources of error.

C INQ9
Provide explanations to investigated problems or questions.

C INQ10
Communicate about science in different formats, using relevant science vocabulary, supporting evidence and clear logic.

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.

8.1 (C 22)
Calculate average speed of a moving object and illustrate the motion of objects in graphs of distance over time.

8.1 (C 23)
Describe the qualitative relationships among force, mass and changes in motion.

8.1 (C 24)
Describe the forces acting on an object moving in a circular path.

Heredity and Evolution: *What are the processes 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.

8.2 (C 25)
Explain the similarities and differences in cell division in somatic and germ cells.

8.2 (C 26)
Describe the structure and function of the male and female human reproduction system, including the process of egg and sperm production.

8.2 (C 27)
Describe the structure of the genes on chromosomes, and explain sex determination in humans.

Earth in the Solar System: *How does the position of Earth in the solar system affect the conditions on our planet?*

8.3
The solar system is composed of planets and other objects that orbit the sun.

8.3 (C 28)
Explain the effect of gravity on the orbital movement of planets in the solar system.

8.3 (C 29)
Explain how the regular motion of the Sun, Earth and Moon explains the seasons, phases of the moon and eclipses.

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.

8.4 (C 30)
Explain how beam, truss and suspension bridges are designed to withstand the forces that act on them.

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