

Grade 7 – Science Curriculum

| Earth and Space Science GLE | Student Friendly Language |
|--|--|
| <p>ESS1:7-8:7.1 Describe how water flows into and through a watershed, falling on the land, collecting in rivers and lakes, soil, and porous layers of rock until much of it flows back into the ocean.</p> <p>ESS1:7-8:7.2 Identify the chemical and physical properties that make water an essential component of the Earth's system.</p> <div style="border: 2px solid black; padding: 5px;"> <p>ESS1:7-8:7.3 Explain the processes that cause cycling of water into and out of the atmosphere and their connections to our planet's weather patterns. [ESS1(5-8)SAE-2]</p> </div> <p>ESS2:7-8:1.3 Recognize the relationships between the tides and the phases of the Moon, and use tide charts and National Oceanic & Atmospheric Administration (NOAA) information to describe them.</p> <p>ESS2:7-8:2.1 Describe the Sun as the principle energy source for phenomena on the Earth's surface.</p> <p>ESS4:7-8:1.1 Describe ways in which technology has increased our understanding of the world in which we live.</p> <p>ESS2:7-8:1.1 Identify the characteristics of the Sun and its position in the universe.</p> <p>ESS2:7-8:1.2 Recognize and describe how the regular and predictable motions of the Earth and Moon account for phenomena, such as the phases of the Moon and eclipses.</p> | <p>I can describe how water flows through the different levels of a watershed.</p> <p>I can identify the chemical and physical properties of water. I know why water is an essential part of the Earth's system.</p> <p>I can explain the process that causes water to cycle in and out of the atmosphere and their connections to our planet's weather patterns.</p> <p>I know the connection between the tides and the phases of the Moon. I can also use tide charts and NOAA information to describe them.</p> <p>I can describe the Sun as the main energy source for the Earth's surface.</p> <p>I can describe ways that technology has increased our understanding of the world around us.</p> <p>I can identify the characteristics of the Sun and its position in the universe.</p> <p>I can describe the motions of celestial objects and the phenomena that occur because of them.</p> |

Adopted by the Candia School Board: May 3, 2007
Adopted by the Auburn School Board: May 8, 2007
Adopted by the Hooksett School Board: May 15, 2007

Grade 7 – Science Curriculum

| | |
|---|--|
| <p>ESS2:7-8:1.4 Explain the temporal or positional relationships between or among the Earth, Sun and Moon (e.g., night/day, seasons, year, tide). [ESS2(5-8)SAE+POC-8]</p> | <p>I can explain the temporal and positional relationships between the Earth, Sun and Moon.</p> |
| <p>ESS2:7-8:3.1 Identify the characteristics and movement patterns of the planets in our Solar System and differentiate between them.</p> | <p>I can identify the characteristics and movement patterns of the planets and tell them apart from one another.</p> |
| <p>ESS2:7-8:3.2 Explain the affects of gravitational force on the planet and their moons.</p> | <p>I can explain how gravity affects the planets and their moons.</p> |
| <p>ESS2:7-8:3.4 Compare and contrast planets based on data provided about size, composition, location, orbital movement, atmosphere, or surface features (includes moons). [ESS2(5-8)MAS-6]</p> | <p>I can compare and contrast the planets and their moons using data given to me.</p> |
| <p>ESS2:7-8:3.5 Explain how gravitational force affects objects in the Solar System (e.g., moons, tides, orbits, satellites). [ESS2(5-8)SAE+POC-8]</p> | <p>I can explain how gravity affects objects in the Solar System.</p> |

Grade 7 – Science Curriculum

| | |
|---|---|
| <p>ESS2:7-8:4.1 Explain how technological advances have allowed scientists to re-evaluate or extend existing ideas about the Solar System. [ESS2(5-8)NOS-7]</p> | <p>I can explain how technology has increased and helped our knowledge of the Solar System.</p> |
| <p>ESS3:7-8:1.1 Define an astronomical unit as the distance from the Earth to the Sun.</p> | <p>I know that an astronomical unit is the distance from the Earth to the Sun and can define it.</p> |
| <p>ESS3:7-8:1.2 Explain that special units of measure, such as light years and astronomical units are used to calculate distances in space.</p> | <p>I can explain about the special units of measurement used just for space.</p> |
| <p>ESS3:7-8:2.1 Describe objects such as asteroids, comets, and meteors in terms of their characteristics and movement patterns.</p> | <p>I can describe the characteristics and movement patterns of space objects like asteroids, comets, and meteors.</p> |
| <p>ESS3:7-8:3.1 Describe the universe as being composed of billions of galaxies, each containing many billions of stars, and that there are vast distances separating these galaxies and stars from one another.</p> | <p>I can describe how the universe is made up of billions of galaxies, each made of billions of stars. I know that there are huge distances between galaxies and between stars.</p> |
| <p>ESS2:7-8:3.3 Explain why the planet Earth and our Solar System appear to be somewhat unique, while acknowledging recent evidence that suggests similar systems exist in the universe.</p> | <p>I can explain why the Earth and our Solar System seem to be unique. I can also give proof that other solar systems in the universe are similar to ours.</p> |
| <p>ESS4:7-8:1.1 Describe ways in which technology has increased our understanding of the world in which we live.</p> | <p>I can tell the different ways that technology has helped our understanding of the world around us.</p> |
| <p>ESS4:7-8:1.2 Recognize the importance of technology as it relates to science, for purposes such as access to space and other remote locations, sample collection and treatment, measurement, and data collection.</p> | <p>I know that technology is important to science to help us understand space, remote locations, sample collections, measurement, and data collection.</p> |

*Adopted by the Candia School Board: May 3, 2007
Adopted by the Auburn School Board: May 8, 2007
Adopted by the Hooksett School Board: May 15, 2007*

Grade 7 – Science Curriculum

| | |
|--|--|
| <p>ESS4:7-8:2.1 Calculate temperature in degrees Celsius.</p> | <p>I can calculate the temperature in degrees Celsius.</p> |
| <p>ESS4:7-8:2.2 Perform calculations using metric measurements.</p> | <p>I can measure using the metric system.</p> |
| <p>ESS4:7-8:2.3 Describe how man uses land-based light telescopes, radio telescopes, satellites, manned exploration, probes and robots to collect data.</p> | <p>I can tell how we use land-based light telescopes, radio telescopes, satellites, manned exploration, probes and robots to collect data.</p> |
| <p>ESS4:7-8:3.1 Provide examples of how creative thinking and economic need has shaped the way people use natural materials, such as the use of metal ores petroleum and fresh water.</p> | <p>I know that we can find new ways to use natural materials when we think creatively or make money from doing it.</p> |
| <p>ESS4:7-8:3.2 Explain how to test natural materials to measure and compare their properties.</p> | <p>I can tell the different ways to test natural materials and to compare their properties.</p> |
| <p>ESS4:7-8:3.3 Explain how technologies can reduce the environmental impact of natural disasters.</p> | <p>I can tell how technology can reduce the environmental impact of natural disasters.</p> |
| <p>ESS4:7-8:3.4 Identify the potential impact of converting forested land to uses such as farms, homes, factories, or tourist attractions.</p> | <p>I can tell how changing forests to farms and other things will impact the environment.</p> |
| <p>ESS4:7-8:4.1 Understand that some scientific careers involve the application of Earth and Space Science content knowledge and experience in specific ways that meet the goals of the job.</p> | <p>I know that what I learn in Earth and Space Science might be important to the job I choose in the future.</p> |
| <p>ESS1:7-8:1.1 Identify and describe the processes involved in the water cycle and explain its effects on climatic patterns.</p> | <p>I can show and describe the water cycle. I can also explain how it affects climate.</p> |

Adopted by the Candia School Board: May 3, 2007
Adopted by the Auburn School Board: May 8, 2007
Adopted by the Hooksett School Board: May 15, 2007

Grade 7 – Science Curriculum

| | |
|--|---|
| <p>ESS1:7-8:1.2 Identify and describe the impact certain factors have on the Earth's climate, including changes in the oceans' temperature, changes in the composition of the atmosphere, and geological shifts due to events, such as volcanic eruptions and glacial movements.</p> <p>ESS1:7-8:4.1 Describe how catastrophic changes that have taken place on the Earth's surface can be revealed by satellite images.</p> <p>ESS1:7-8:5.3 Explain the role of differential heating or convection in ocean currents, winds, weather and weather patterns, atmosphere, or climate. [ESS1(5-8)SAE+POC-4]</p> | <p>I can show and describe things that affect the Earth's climate, like changes in ocean temperature, changes in the composition of atmosphere, geological shifts, volcanic eruptions, and glacial movements.</p> <p>I can describe how satellite images have shown changes on the Earth's surface because of catastrophic events.</p> <p>I can explain the role of differential heating or convection in ocean currents, winds, weather and weather patterns, atmosphere or climate.</p> |
|--|---|

Grade 7 – Science Curriculum

| Life Science GLE | Student Friendly Language |
|--|---|
| <p>LS1:7-8:2.5 Using data and observations about the biodiversity of an ecosystem make predictions or draw conclusions about how the diversity contributes to the stability of the ecosystem.</p> <p>LS1:7-8:1.2 Explain that in all environments, organisms with similar needs may compete with one another for resources, including food, space, water, air, and shelter, and that in any particular environments the growth and survival of organisms depend on the physical conditions.</p> <p>LS2:7-8:1.1 Explain how changes in environmental conditions can affect the survival of individual organisms and the entire species.</p> <p>LS2:7-8:1.3 Using data and observations, predict outcomes when abiotic/biotic factors are changed in an ecosystem.</p> <p>LS2:7-8:2.2 Given a scenario, trace the flow of energy through an ecosystem, beginning with the sun, through organisms in the food web, and into the environment (includes photosynthesis and respiration).</p> <p>LS2:7-8:3.3 Know that all organisms, including humans, are part of, and depend on, two main interconnected global food webs, one which includes microscopic ocean plants, and the other which includes land plants.</p> <p>LS2:7-8:3.4 Describe how matter is recycled within ecosystems and explain that the total amount of matter remains the same, though its form and location change.</p> | <p>I can use data and observations about the different living things within an ecosystem to make predictions or draw conclusions. I can use that information to explain how that diversity helps the ecosystem stay healthy.</p> <p>I can explain how in all ecosystems, living things compete with one another for all the things they need to stay alive. I know that all ecosystems are dependent on their abiotic factors.</p> <p>I can explain how changes in the environment affect whether or not some organisms or populations survive.</p> <p>I can use data and observations to make predictions about an ecosystem when the biotic and abiotic factors are changed.</p> <p>I can show the flow of energy through an ecosystem.</p> <p>I know that all organisms, including humans, depend on connected food chains and that each of those food chains starts with a producer.</p> <p>I can describe how all matter is recycled in an ecosystem. I also know that the amount of matter stays the same, even if it changes form.</p> |

Adopted by the Candia School Board: May 3, 2007
Adopted by the Auburn School Board: May 8, 2007
Adopted by the Hooksett School Board: May 15, 2007

Grade 7 – Science Curriculum

| | |
|--|---|
| <p>LS2:7-8:3.5 Identify carbon, hydrogen, nitrogen, and phosphorus as common elements of living matter.</p> <p>LS2:7-8:3.6 Given an ecosystem, trace how matter cycles among and between organisms and the physical environment (includes water, oxygen, food web, decomposition, recycling but not carbon cycle or nitrogen cycle).</p> <p>LS3:7-8:1.1 Describe the type of impact certain environmental changes, including deforestation, invasive species, increased erosion, and pollution containing toxic substances, could have on local environments.</p> <p>LS3:7-8:3.2 Recognize that in any given environment the growth and survival of organisms depend on the physical conditions that exist, and explain that in all environments, organisms with similar needs may compete with one another for resources, including food, space, water, air, and shelter.</p> <p>LS3:7-8:3.3 Explain how individual organisms with certain traits are more likely than others to survive and have offspring.</p> <p>LS5:7-8:1.1 Explain ways technology has influenced the course of history, as it relates to agriculture, sanitation and medicine.</p> <p>LS5:7-8:1.2 Provides examples of ways technology is used to protect the environment, such as using bacteria to clean water.</p> <p>LS5:7-8:2.1 Recognize and provide examples of how technology has enhanced the study of life sciences, as in the development of advanced diagnosing equipment improving medicine.</p> | <p>I can identify the four major elements in any living thing.</p> <p>I can show you the cycles of water, oxygen, and energy within a food web throughout an ecosystem.</p> <p>I can describe how certain changes in the environment can cause negative affects on local environments.</p> <p>I know that all living things depend on abiotic factors in order to survive.</p> <p>I can explain why some organisms with certain characteristics are more likely to survive over other organisms.</p> <p>I can explain different ways that technology has changed history.</p> <p>I can give examples of ways in which we use technology to protect the environment.</p> <p>I know and can give examples of ways that technology has helped medicine throughout history.</p> |
|--|---|

Adopted by the Candia School Board: May 3, 2007
Adopted by the Auburn School Board: May 8, 2007
Adopted by the Hooksett School Board: May 15, 2007

Grade 7 – Science Curriculum

| | |
|--|---|
| <p>LS5:7-8:3.1 Explain the necessity of, and purpose for the proper disposal of medical products</p> <p>LS5:7-8:3.2 Give examples of how increased understanding of biology has led to improvements in biotechnology, such as scientific methods for increasing the yield or pest-resistance of important food crops.</p> <p>LS5:7-8:3.3 Describes ways biotechnology helps humans, including improved health and medicine</p> <p>LS5:7-8:4.1 Understand that some scientific jobs/careers involve the application of life science knowledge and experience in specific ways that meet the goals of the job.</p> | <p>I can explain why it is important to properly dispose medical products.</p> <p>I know what biotechnology is. I know that when we learn more we can combine technology and biology together to help the world around us.</p> <p>I know different ways that biotechnology has helped humans in terms of health and medicine.</p> <p>I know that what I learn here might help me in the job I choose someday.</p> |
|--|---|

Grade 7 – Science Curriculum

| Physical Science GLE | Student Friendly Language |
|--|---|
| <p>PS2:7-8:3.4 Explain that the human eye can only detect wavelengths of electromagnetic radiation within a narrow range, and explain that the differences of wavelength within that range of visible light are perceived as differences in color.</p> | <p>I can explain that the human eye can only detect certain wavelengths within the electromagnetic spectrum. I know that we see different colors because they are at different wavelengths.</p> |
| <p>PS2:7-8:3.5 Recognize that most chemical and nuclear reactions involve a transfer of energy.</p> | <p>I know that most chemical and nuclear reactions involve a transfer of energy.</p> |
| <p>PS2:7-8:3.6 Use data to draw conclusions about how heat can be transferred (convection, conduction, radiation).</p> | <p>I can use information to make conclusions about how heat can be transferred as convection, conduction or radiation.</p> |
| <p>PS2:7-8:3.1 Differentiate between kinetic energy, which is the energy of motion and potential energy, which depends on relative position.</p> | <p>I can tell the difference between kinetic and potential energy.</p> |
| <p>PS2:7-8:2.1 Explain the law of conservation of energy.</p> | <p>I can explain the Law of Conservation Energy.</p> |
| <p>PS2:7-8:1.5 Given a real-world example, show that within a system, energy transforms from one form to another (i.e., chemical, heat, electrical, gravitational, light, sound, mechanical)</p> | <p>I can give real life examples that show how energy transforms from one form to another.</p> |
| <p>PS2:7-8:3.3 Describe ways light interacts with matter, such as transmission, including refraction, absorption, and scattering, which includes reflection.</p> | <p>I can describe the different ways that light interacts with matter.</p> |
| <p>PS3:7-8:1.1 Explain that the force of gravity gets stronger the closer you get to an object and decreases the further you get from it.</p> | <p>I can explain that the force of gravity gets stronger the closer you get to an object. I can also explain that the force of gravity gets weaker the further you get from it.</p> |

Adopted by the Candia School Board: May 3, 2007
Adopted by the Auburn School Board: May 8, 2007
Adopted by the Hooksett School Board: May 15, 2007

Grade 7 – Science Curriculum

| | |
|---|--|
| <p>PS3:7-8:1.2 Recognize the general concepts related to gravitational force.</p> <p>PS3:7-8:1.3 Use data to determine or predict the overall (net) effect of multiple forces (e.g., friction, gravitational, magnetic) on the position, speed, and direction of motion of objects.</p> <p>PS3:7-8:2.1 Explain that an object in motion that is unaffected by a force will continue to move at a constant speed and in a straight line</p> <p>PS3:7-8:2.2 Explain how the motion of an object can be described by its position, direction of motion, and speed, and illustrate how that motion can be measured and represented graphically</p> <p>PS4:7-8:1.1 Understand that design features, such as size, shape, weight, and function, must be considered when designing new technology.</p> <p>PS4:7-8:2.1 Demonstrate appropriate use of tools, such as rulers, calculators, balances, and graduated cylinders to measure and calculate volume and mass.</p> <p>PS4:7-8:3.1 Explain how humans use natural resources, such as flowing water and burning of coal, oil, or natural gas to generate electrical energy in power plants.</p> <p>PS4:7-8:3.2 Describe how natural resources, such as coal, oil and natural gas are tapped for use in power plants, and how alternative sources, such as solar, wind, water, nuclear are tapped for power, and compare the advantages and disadvantages of each source.</p> | <p>I recognize ideas that concern gravitational force.</p> <p>I can use data to determine or predict the effect of something if it has more than one force acting on it, like its position, speed, or direction.</p> <p>I can explain Newton's Laws.</p> <p>I can explain how the motion of an object can be measured and shown on a graph.</p> <p>I understand that when designing new technology we have to keep in mind things like size, shape, weight, and function.</p> <p>I can use science tools to measure in order to better understand science.</p> <p>I can explain how we use natural resources in order to generate electrical energy in power plants.</p> <p>I can compare the advantages and disadvantages of using natural resources or alternative energy resources.</p> |
|---|--|

Adopted by the Candia School Board: May 3, 2007

Adopted by the Auburn School Board: May 8, 2007

Adopted by the Hooksett School Board: May 15, 2007

Grade 7 – Science Curriculum

| | |
|---|---|
| <p>PS4:7-8:3.3 Differentiate between durable good, which are designed to operate for a long period of time, and non-durable goods, which are only intended to operate for a short period of time.</p> | <p>I can tell the difference between durable goods and non-durable goods.</p> |
| <p>PS4:7-8:4.1 Understand that some scientific jobs/careers involve the application of physical science content knowledge and experience in specific ways that meet the goals of the job.</p> | <p>I know that what I learn now might be important to the job I choose in the future.</p> |