

**Illinois School for the Deaf
Course Curriculum**

Course Title: Science Grades 6 - 8 Cycle: Year 3 (Physical Science)

Course Agenda:

Topic	Length of Unit	NGSS Standards	ELA CCSS Standards – Reading Informational Text			ELA CCSS Standards – Writing
			Grade 6	Grade 7	Grade 8	Grade 6
Characteristics of Matter	3 weeks	MS-PS1-1., MS-PS1-3., MS-PS1-4.	Key Ideas and Details RL.6.1. RL.6.2. RL.6.3	Key Ideas and Details RL.7.1. RL.7.2. RL.7.3.	Key Ideas and Details RL.8.1. RL.8.2. RL.8.3.	Text Types and Purposes W.6.1. W.6.2. W.6.3.
Compounds and Mixtures	3 weeks	MS-PS1-2., MS-PS1-5., MS-PS1-6.				
Atoms and Elements	5 weeks	MS-PS1-1., MS-PS1-3., MS-PS1-4.				
Forces and Motion	5 weeks	MS-PS2-1., MS-PS2-2., MS-PS2-3., MS-PS2-4., MS-PS2-5., MS-PS3-1., MS-PS3-2., MS-PS3-3., MS-PS3-4., MS-PS3-5.	Craft and Structure RL.6.4. RL.6.5. RL.6.6.	Craft and Structure RL.7.4 RL.7.5. RL.7.6.	Craft and Structure RL.8.4. RL.8.5. RL.8.6.	Production and Distribution of Writing W.6.4. W.6.5. W.6.6.
Scientific Method	2 weeks	MS-ETS1-1., MS-ETS1-2., MS-ETS1-3., MS-ETS1-4.	Integration of Knowledge and Ideas RL.6.7. RL.6.8. RL.6.9.	Integration of Knowledge and Ideas RL.7.7. RL.7.8. RL.7.9.	Integration of Knowledge and Ideas RL.8.7. RL.8.8. RL.8.9.	Research to Build and Present Knowledge W.6.7. W.6.8. W.6.9
			Range of Reading and Level of Text Complexity RL.6.10	Range of Reading and Level of Text Complexity RL.7.10.	Range of Reading and Level of Text Complexity RL.8.10.	

Assessments: May include the following: daily classroom work, participation, homework, written and oral quizzes, tests, quarterly exams, final exam, projects, etc.

Course Materials: may include texts, workbooks, assigned reading materials, supplementary materials, etc.

Prentice Hall Chemical Building Blocks Science Explorer

Prentice Hall Chemical Interactions Science Explorer

Prentice Hall Motion, Forces, and Energy Science Explorer

Middle School – Matter and Its Interactions

MS-PS1-1: Develop models to describe the atomic composition of simple molecules and extended structures.

MS-PS1-2: Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

MS-PS1-3: Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.

MS-PS1-4: Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.

MS-PS1-5: Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.

MS-PS1-6: Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.

Middle School – Motion and Stability: Forces and Interactions

MS-PS2-1: Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.

MS-PS2-2: Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.

MS-PS2-3: Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.

MS-PS2-4: Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses interacting objects.

MS-PS2-5: Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.

Middle School – Energy

MS-PS3-1: Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.

MS-PS3-2: Develop a model to describe that when the arrangements of objects interacting at a distance changes, different amounts of potential energy are stored in the system.

MS-PS3-3: Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

MS-PS3-4: Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.

MS-PS3-5: Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.

Middle School – Waves and their Applications in Technologies for Information Transfer

MS-PS4-1: Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.

MS-PS4-2: Develop and use a model to describe the waves are reflected, absorbed, or transmitted through various materials.

MS-PS4-3: Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.

Middle School – From Molecules to Organisms: Structures and Processes

MS-LS1-1: Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different number and types of cells.

MS-LS1-2: Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.

MS-LS1-3: Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.

MS-LS1-4: Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.

MS-LS1-5: Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.

MS-LS1-6: Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

MS-LS1-7: Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.

MS-LS1-8: Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.

Middle School: Ecosystems: Interactions, Energy, and Dynamics

MS-LS2-1: Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

MS-LS2-2: Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

MS-LS2-3: Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

MS-LS2-4: Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

MS-LS2-5: Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

Middle School: Heredity: Inheritance and Variation of Traits

MS-LS3-1: Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.

MS-LS3-2: Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.

Middle Schools: Biological Evolution: Unity and Diversity

MS-LS4-1: Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and changes of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.

MS-LS4-2: Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.

MS-LS4-3: Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.

MS-LS4-4: Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.

MS-LS4-5: Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.

MS-LS4-6: Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.

Middle School: Earth's Place in the Universe

MS-ESS1-1: Develop and use a model of Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.

MS-ESS1-2: Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.

MS-ESS1-3: Analyze and interpret data to determine scale properties of objects in the solar system.

MS-ESS1-4: Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.

Middle School: Earth's Systems

MS-ESS2-1: Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.

MS-ESS2-2: Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

MS-ESS2-3: Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.

MS-ESS2-4: Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.

MS-ESS2-5: Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.

MS-ESS2-6: Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.

Middle School: Earth and Human Activity

MS-ESS3-1: Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.

MS-ESS3-2: Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.

MS-ESS3-3: Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

MS-ESS3-4: Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

MS-ESS3-5: Ask questions to clarify evidence of the factors that have caused the rise in global temperature over the past century.

Middle School: Engineering Design

MS-ETS1-1: Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they met the criteria and constraints of the problem.

MS-ETS1-3: Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

MS-ETS1-4: Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

6th Grade ELA Common Core Standards

Key Ideas and Details

RL.6.1: Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

RL.6.2: Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.

RL.6.3: Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).

Craft and Structure

RL.6.4: Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.

RL.6.5: Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas.

RL.6.6: Determine an author's point of view or purpose in a text and explain how it is conveyed in the text.

Integration of Knowledge and Ideas

RL.6.7: Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.

RL.6.8: Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.

RL.6.9: Compare and contrast one author's presentation of events with that of another (e.g., a memoir written by and a biography on the same person).

Range of Reading and Level of Text Complexity:

RL.6.10: By the end of the year, read and comprehend literary nonfiction in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.

7th Grade ELA Common Core Standards

Key Ideas and Details

RL.7.1: Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

RL.7.2: Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.

RL.7.3: Analyze the interactions between individuals, events, and ideas in a text (e.g., how ideas influence individuals or events, or how individuals influence ideas or events).

Craft and Structure

RL.7.4: Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of a specific word choice on meaning and tone.

RL.7.5: Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to the development of the ideas.

RL.7.6: Determine an author's point of view or purpose in a text and analyze how the author distinguishes his or her position from that of others.

Integration of Knowledge and Ideas

RL.7.7: Compare and contrast a text to an audio, video, or multimedia version of the text, analyzing each medium’s portrayal of the subject (e.g., how the delivery of a speech affects the impact of the words).

RL.7.8: Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims.

RL.7.9: Analyze how two or more authors writing about the same topic shape their presentations of key information by emphasizing different evidence or advancing different interpretations of facts.

Range of Reading and Level of Text Complexity

RL.7.10: By the end of the year, read and comprehend literary nonfiction in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.

8th Grade ELA Common Core Standards

Key Ideas and Details

RL.8.1: Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.

RL.8.2: Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text.

RL.8.3: Analyze how a text makes connections among and distinctions between individuals, ideas, or events (e.g., through comparisons, analogies, or categories).

Craft and Structure

RL.8.4: Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.

RL.8.5: Analyze in detail the structure of a specific paragraph in a text, including the role of particular sentences in developing and refining a key concept.

RL.8.6: Determine an author’s point of view or purpose in a text and analyze how the author acknowledges and responds to conflicting evidence or viewpoints.

Integration of Knowledge and Ideas

RL.8.7: Evaluate the advantages and disadvantages of using different mediums (e.g., print or digital text, video, multimedia) to present a particular topic or idea.

RL.8.8: Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced.

RL.8.9: Analyze a case in which two or more texts provide conflicting information on the same topic and identify where the texts disagree on matters of fact or interpretation.

Range of Reading and Level of Text Complexity

RL.8.10: By the end of the year, read and comprehend literary nonfiction at the high end of the grades 6–8 text complexity band independently and proficiently.

6th Grade Common Core ELA Writing Standards **Text Type and Purposes**

W.6.1: Write arguments to support claims with clear reasons and relevant evidence.

W.6.2: Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

W.6.3: Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.

Production and Distribution of Writing

W.6.4: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

W.6.5: With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.

W.6.6: Use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of three pages in a single sitting.

Research to Build and Present Knowledge

W.6.7: Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.

W.6.8: Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources.

W.6.9: Draw evidence from literary or informational texts to support analysis, reflection, and research.