

Curriculum

Content Area:	SCIENCE AND TECHNOLOGY	Grade Level:	7
MLR Content Standard:	A. UNIFYING THEMES: Students will be able to apply the concepts of systems, models, constancy and change and scale to further science and technological understanding		
MLR Performance Indicators	WSD Benchmarks The student will	Instruction Level*	Common Assessment
<i>Instruction Levels: I = Introduced; R = Reinforced; E = Evaluated through a Documented Classroom Activity; D = District Common Assessment</i>			
A1a	Explain how parts are related to other parts in a system and how the output of one part of the system can become the input of another	I,R,E	
A1b	Explain that systems may be thought of as containing subsystems and as being a subsystem of a larger system.	I,R,E	
A2a	Justify whether a model is useful in specific circumstances.	R	
A2b	Evaluate different models that could be used to represent the same thing for their usefulness, taking into account such things as the model's purpose and complexity.	R	
A2b	Compare the results of predictions on the same phenomena from multiple models to determine the strengths and weaknesses of each model. •Compare and contrast the wave and particle model of light.	R	
A4b	Mathematically represent large magnitudes of scale.	R,E	

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MLR Content Standard:	B. THE SKILLS AND TRAITS OF SCIENTIFIC INQUIRY AND TECHNOLOGICAL DESIGN: Students will have the ability to plan, conduct, analyze data from and communicate results of in-depth scientific investigations and use a systematic process, tools, equipment, and a variety of materials to create a technological design producing a solution to meet a specified need.		
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B1a	Identify questions that can be answered through scientific investigations.	R,E	
B1b	Design and safely conduct scientific investigations including controlled experiments.	R,E	
B1c	Use appropriate tools and techniques to gather, analyze, and interpret data.	R,E	
B1c	Acquire and use, during appropriate activities throughout the course, the scientific practical skills: <ul style="list-style-type: none"> • Use of common laboratory apparatus such as the Bunsen burner, microscope. • Use of the following measuring instruments: measuring cylinder, meter rule and measuring tape, triple-beam balance, electronic balance, spring balance, stop-watch, thermometers. • Estimation and/or measurements of length, area, volume, mass and time (irregular shape objects, volume and mass of liquids and solids. 	R,E	

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B1c	Use the appropriate units for length, mass, time and temperature <ul style="list-style-type: none"> • Interpret and use the appropriate prefixes, milli- centi- or kilo- in relation to the units of length and mass. • Explain what is meant by average speed. • Calculate average speed using the formula (Average speed = distance traveled/time taken.) • Determine appropriate units for physical quantities such as area, volume, and rate. 	R,E	
B1d	Use mathematics to ask questions; gather, organize, and present data; and structure convincing arguments.	R,E	
B1e	Develop descriptions, explanations, predictions, and models using evidence.	R,E	
B1f	Use logic and critical reasoning to link evidence and explanations.	R,E	
B1g	Recognize and analyze alternative explanations and predictions.	R,E	
B1h	Communicate scientific procedures and explanations.	R,E	

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Content Area:	SCIENCE AND TECHNOLOGY	Grade Level:	7
MLR Content Standard:	C. THE SCIENTIFIC AND TECHNOLOGICAL ENTERPRISE: Students will understand the history and nature of scientific knowledge and technology, the processes of inquiry and technological design, and the impacts science and technology have on society and the environment.		
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C2a	Compare and contrast the processes of scientific inquiry and technological design.	I,R,E	
C2b	Explain how constraints and consequences relate to scientific inquiry and technological design.	I,R,E	
C4a	Describe how women and men of various backgrounds, working in teams or alone but communicating extensively with others, engage in science, engineering and related fields.	R,E	
C4b	Describe a breakthrough from the history of science that contributes to our current understanding of science.	R,E	
C4c	Describe the basis for understanding science as a human endeavor that generates explanations based on verifiable evidence and why it is subject to change when new evidence does not match existing explanations.	R,E	

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Content Area:	SCIENCE AND TECHNOLOGY	Grade Level:	7
MLR Content Standard:	D. THE PHYSICAL SETTING: Students will understand the universal nature of matter, energy, force and motion, and will be able to identify how these relationships are exhibited in Earth Systems, in the solar system and throughout the universe.		
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D2c	Give several reasons why the climate is different in different regions of the Earth.	R,E	
D3a	Describe that all matter is made up of atoms and distinguish between/among elements, atoms and molecules.	R,E	
D3e	Explain that atoms can be packed together in large arrays that compose all substances including compounds, mixtures, and solutions.	R,E	
D3f	Explain that some characteristics of matter including density, boiling point and solubility are not dependent on the amount of matter present and other characteristics are.	R,E	
D3g	Use the idea of atoms to explain the conservation of matter.	R,E	
D4a	Describe the kind of motion that sound, and light waves have in common, and how their motions are different.	R,E	
D4b	Explain the relationship between visible light, the electromagnetic spectrum and sight.	R,E	
D4c	State what determines the strength of the gravitational force between any two objects and the effects on the solar system.	R,E	

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D4d	Explain that electric currents and magnets exert force on each other.	R,E	
D4e	Describe the effects of different types of force on an object.	R,E	
D4a	Describe the vast difference in speed between light and sound and common moving objects.	R,E	
D4a	Explain how reflection is affected by a smooth and rough surface.	R,E	
D4a	Give the characteristics of the image formed by a plane mirror.	R,E	
D4a	Describe the effects and uses of reflecting surfaces (e.g. plane and curved).	R,E	
D4a	Describe the difference between reflection and refraction.	R,E	
D4a	Describe the production of sounds by vibrating objects.	R,E	
D4a	Recognize that sound transfer energy and that it takes time to travel from one point to another through a medium.	R,E	
D4a	Identify sounds of different pitch and relate the pitch to their frequencies.	R,E	
D4a	Explain how the ear detects sound (detailed structure of the ear not required).	R,E	

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D4a	Recognize the importance of sound in our society and the adverse effect of noise in our environment.	R,E	
D4b	Describe the dispersion of white light by a prism.	R,E	
D4d	Explain what is meant by current, potential difference, and resistance.	R,E	
D4d	Draw and interpret circuit diagrams and set up circuits containing electrical sources, switches, lamps, and resistors.	R,E	
D4d	Recognize that arranging resistors in series or in parallel can vary the resistance of a circuit.	R,E	
D4d	Explain what is meant by power and state its units.	R,E	
D4d	Solve simple problems on the cost of using electrical appliances, using kilowatt-hour as a unit of electrical energy consumption.	R,E	
D4d	State some electrical hazards and precautionary measures to ensure the safe use of electricity in the home.	R,E	
D4d	Discuss the importance of reducing energy wastage.	R,E	

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Content Area:	SCIENCE AND TECHNOLOGY	Grade Level:	7
MLR Content Standard:	E. THE LIVING ENVIRONMENT: Students will understand that cells are the basic unit of life, that all life as we know it has evolved through genetic transfer and natural selection to create a great diversity of organisms and that these organisms create an interdependent web through which matter and energy flow. They will understand their similarities and differences as humans to the other organisms and their interconnections to these webs.		
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E3a	Compare and contrast organelles of plant and animal cells focusing on the nucleus, cell wall, cell membrane, vacuole, cytoplasm, mitochondria, endoplasmic reticulum, ribosome, chloroplast.	R,E	
E3b	Explain the relationship among cells, tissues, organs and organ systems.	R,E	

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E3c	<p>Compare the structures, functions and interactions of systems that single-celled organisms and multi-cellular plants and animals (including human beings) employ for defense, energy acquisition and use, regulation, species continuation, and overall coordination.</p> <ul style="list-style-type: none"> •Discuss how different body tissue and organs are made up of different kinds of cells (I). •Illustrate how cells repeatedly divide to make more cells from growth and repair (I). •Explain that all living things are composed of cells, from just one to many millions, whose details are usually visible only through a microscope (R). •Explain that within cells, many of the basic functions or organisms-such as extracting energy from food and getting rid of waste - are carried out. The way in which cells function is similar in all living organisms (I). •Illustrate how photosynthesis and respiration are related (I). •Compare and contrast osmosis and diffusion (I). •Show an understanding of the functions of the different parts of a cell, including the nucleus that contains genetic material that determines heredity (I). 	I,R,E	

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E3c	Examine plant cells under the microscope and identify the different parts of a cell: (cell wall, cell membrane, cytoplasm, nucleus, vacuole, chloroplast).	R,E	
E3c	Examine animal cell under the microscope and identify the different parts of the cell: (cell membrane, cytoplasm, nucleus).	R,E	

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