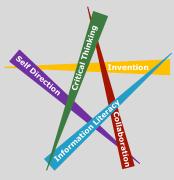
Curriculum Development Course at a Glance Planning for 5th Grade Science

Content Area	Science	Grade Level	5 th Grade	
Course Name/Course Code				
Standard	Grade Level Expectations (GLE)			GLE Code
1. Physical Science	1. Mixtures of matter can be separated regardless of how they were created; all weight and mass of the mixture are the same as the sum of weight and mass of its parts SC09-GR.5-S.1-GLE			SC09-GR.5-S.1-GLE.1
2. Life Science	All organisms have structures and systems with separate functions			SC09-GR.5-S.2-GLE.1
	2. Human body systems have basic structures, functions, and needs SC09-GR.5-S.2-GLE.2			SC09-GR.5-S.2-GLE.2
3. Earth Systems Science	1. Earth and sun provide a diversity of renewable and nonrenewable resources			SC09-GR.5-S.3-GLE.1
	2. Earth's surface changes constantly through a variety of processes and forces			SC09-GR.5-S.3-GLE.2
	3. Weather conditions change because of the uneven heating of Earth's surface by the Sun's energy. Weather changes are measured by differences in temperature, air pressure, wind and water in the atmosphere and type of precipitation		SC09-GR.5-S.3-GLE.3	

Colorado 21st Century Skills



Critical Thinking and Reasoning: *Thinking Deeply, Thinking Differently*

Information Literacy: Untangling the Web

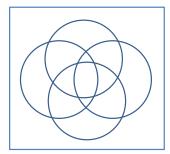
Collaboration: Working Together, Learning

Together

Self-Direction: Own Your Learning

Invention: Creating Solutions

Intragrated Curriculum Design: This intradisciplinary approach matches basic elements in each of the science strands – physical, life, earth systems sciences - forming overlaps in instruction of certain topics and concepts in an authentic integrated model.



Unit Titles	Length of Unit/Contact Hours	Unit Number/Sequence
In the Mix	4 -6 Weeks	1
Life on the Inside	8-12 Weeks	2
Renewable/Nonrenewable Resources	4 -6 Weeks	3
As the Earth Changes	4 -6 Weeks	4
Weather or Not	6-8 Weeks	5

Unit Title	In the Mix		Length of Unit	4 -6 Weeks
Focusing Lens(es)	Interactions	Standards and Grade Level Expectations Addressed in this Unit	SC09-GR.5-S.1-GLE.1	
Inquiry Questions (Engaging- Debatable):	What would life be like if elements or other components did not interact to form mixtures?			
Unit Strands	Physical Science			
Concepts	mixture, matter, properties, combination, characteristics, substances, weight, mass, component,			

Generalizations	Guiding Questions			
My students will Understand that	Factual	Conceptual		
Physical properties such as weight and mass often illuminate the characteristics of an unknown substance (SC09-GR.5-S1-GLE.1-EO.a; RA.1)	What are some physical properties of matter?	How are physical properties used to identify matter? Are physical properties the only way to identify a mixture?		
Scientists separate mixtures into identifiable components based on their physical properties (SC09-GR.5-S1-GLE.1-EO.a,b; N.1,2,3,4)	What are some ways that mixtures can be separated? (SC09-GR.5-S1-GLE.1; IQ2) How does separating a mixture into its component parts impact its weight/mass? (SC09-GR.5-S1-GLE.1-EO.b)	What are some ways that mixtures can be separated? (SC09-GR.5-S1-GLE.1; IQ1) How does separating a mixture impact everyday life? (SC09-GR.5-S1-GLE.1) Why are mixtures created and/or separated? (SC09-GR.5-S1-GLE.1)		
Identifiable components (of a mixture) alter and/or contribute to the properties of a mixture (SC09-GR.5-S1-GLE.1-EO.a)	How do mixtures act similarly and differently from their original materials? (SC09-GR.5-S1-GLE.1;IQ1) Why is the weight and mass of a mixture the same as the weight and mass of its component parts? (SC09-GR.5-S1-GLE.1-EO.b)	When would it be necessary to create or separate a mixture? (SC09-GR.5-S1-GLE.1-EO.b) Why would it be necessary to create or separate a mixture? (SC09-GR.5-S1-GLE.1-EO.b) How do mixtures act similarly and differently from their original materials? (SC09-S1-GLE.1; IQ.1)		

Critical Content: My students will Know	Key Skills: My students will be able to (Do)
 Methods for separating simple mixtures based on physical properties (SC09-GR.5-S1-GLE.1-EO.a; RA.1) The reasons why weight/mass of components affects the weight/mass of the mixture (SC09-GR.5-S1-GLE.1-EO.b) 	 Ask testable questions (SC09-GR.5-S1-GLE.1; N.1) Select and use appropriate tools to conduct an experiment (SC09-GR.5-S1-GLE.1; N.2) Share the results of experiments respectfully (SC09-GR.5-S1-GLE.1; N.3) Develop, communicate, and justify a procedure (SC09-GR.5-S1-GLE.1-EO.a) Share evidence- based conclusions (SC09-GR.5-S1-GLE.1-EO.b) Discuss unexpected experiment results (SC09-GR.5-S1-GLE.1;N.3) Review and analyze scientific information (SC09-GR.5-S1-GLE.1;N.4)

Critical Language: includes the Academic and Technical vocabulary, semantics, and discourse which are particular to and necessary for accessing a given discipline. EXAMPLE: A student in Language Arts can demonstrate the ability to apply and comprehend critical language through the following statement: "Mark Twain exposes the hypocrisy of slavery through the use of satire."					
ability to apply and comp	A student in can demonstrate the ability to apply and comprehend critical language through the following statement(s): Mixtures can be separated based their physical properties.				
Academic Vocabulary:	develop, communicate, justify, analyze, data, conclusion, conduct, procedure, conclusion				
Technical Vocabulary:	mixture, matter, weight, mass, physical properties, hypothesis, experiment, scientific reasoning, liquid, gas, testable, solution				

Unit Title	Life on the Inside	Length of Unit 9-12 Wee	ks
Focusing Lens(es)	Structure/Function	Standards and Grade Level Expectations Addressed in this Unit	SC09-GR.5-S.2-GLE.1 SC09-GR.5-S.2-GLE.2
Inquiry Questions (Engaging- Debatable):	 How is structure dependent on function, and how is function dependent on structure? What is the role of society in protecting the health and survival of all humans? 		
Unit Strands	Life Science		
Concepts	structure, function, interaction, system, interdependence, organisms, survival		

Generalizations My students will Understand that	Guiding Ques	ctions Conceptual	
A plant's or animal's life systems have components that interact interdependently of each other to ensure the organisms survival. (SC09-GR.5-S2-GLE.1-EO.a)	What are the basic biological components of an animal or plant? Which components of a plant's or animal's life system work interdependently with each other? How do plants and animals carry out processes necessary for life? (SC09-GR.5-S.2.GLE.1; IQ.1) What different structures do plants and animals use to carry out the same functions? (SC09-GR.5-S.2.GLE.1; IQ.2)	What components of a plant or animal could cease to function and still allow the organism to survive? What components of a plant or animal could cease to function that would cause the organism to die? What adaptations or characteristics help humans to survive?	
All organisms have structures required for their survival. (SC09-GR.5-S2-GLE.1-EO.a)	What different structures do plants and animals use to carry out life functions? What adaptations or characteristics in plants and/or animals help humans survive? (SC09-GR.5-S2-GLE.1; RA.2)	How do animals- especially humans- use their body structures to manipulate their environment? (SC09-GR.5-S2-GLE.1; RA.1)	
The human body, as an organism, functions because of the interdependence of its included systems. (SC09-GR.5-S2-GLE.2)	What are the systems of the human body? (SC09-GR.5-S2-GLE.2-EO.d) How do the systems of the human body function? (SC09-GR.5-S2-GLE.2-EO.c) How do the systems of the human body work interdependently with each other? (SC09-GR.5-S2-GLE.2-EO.b)	How are the human body systems similar to and different from those found in other organisms? (SC09-GR.5-S2-IQ.1) How are organs impacted when different body systems fail to work correctly? (SC09-GR.5-S.2.GLE.2; IQ.2)	
The structure of a system depends upon its function. (SC09-GR.5-S.2.GLE.2)	What is the function of each body system? (SC09-GR.5-S.2.GLE.2-EO.d,e)	How does the structure of a system affect its function? (SC09-GR.5-S.2.GLE.2-EO.d,e)	

Critical Content: My students will Know	Key Skills: My students will be able to (Do)
 The role of organs or structures for an organisms survival (SC09-GR.5-S.2.GLE.1-EO.a-b) The structure of different organisms structures and how these structures adapt to different functions necessary for survival (SC09-GR.5-S.2.GLE.1; RA.1) How humans manipulate different structures (SC09-GR.5-S.2.GLE.1; RA.1) Examples of the exploitation/manipulation of animals and plants (SC09-GR.5-S.2.GLE.1; RA.2) Tools and materials made by humans inspired by animal or plant adaptations (SC09-GR.5-S.2.GLE.1; RA.3) How humans address basic survival needs (SC09-GR.5-S.2.GLE.2-EO.a) The interdependent nature of human systems are interdependent (SC09-GR.5-S.2.GLE.2-EO.c-d) Examples of goals that people create for their lifestyle such as exercising every day and eating healthy foods (SC09-GR.5-S.2.GLE.2; RA.1) Societal norms and practices intended to protect our health such as wearing a bicycle helmet can be based on scientific evidence (SC09-GR.5-S.2.GLE.2; RA.2) 	 Develop and communicate an evidence-based scientific explanation (SC09-GR.5-S.2.GLE.2-EO.a) Analyze and interpret data to generate evidence (SC09-GR.5-S.2.GLE.2-EO.b) Create and evaluate models (SC09-GR.5-S.2.GLE.2-EO.c) Review and analyze information presented by peers (SC09-GR.5-S.2.GLE.1; N.1) Provide feedback to peers based on presented evidence (SC09-GR.5-S.2.GLE.1-; N.1) Assess scientific explanations (SC09-GR.5-S.2.GLE.2-EO.c) Compare and contrast systems and functions (SC09-GR.5-S.2.GLE.2-EO.e)

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	A student in can demonstrate the ability to apply and comprehend critical language through the following statement(s): The human body is made of systems and the systems work independent and interdependent of each other.				
Academic Vocabulary:	system, structure, function, interpret, manipulate, exploit, analyze, interdependent, evidence, dependence				
Technical Vocabulary:	organisms, organ, adaptations, muscular, skeletal, respiratory, digestive, nervous, circulatory, immune				

Unit Title	Renewable and Nonrenewable	Resources	Length of Unit	4 – 6 Weeks
Focusing Lens(es)	Origins	Standards and Grade Level Expectations Addressed in this Unit	SC09-GR.5-S.3-GLE.1 RWC10-GR.5-S.1-GLE.1	
Inquiry Questions (Engaging- Debatable):	What are the consequences to the earth of utilizing renewable and nonrenewable resources? (SC09-GR.5-S3-GLE.1)			
Unit Strands	Earth Science			
Concepts	renewable resources, nonrenewable resources, energy, natural resources			

Generalizations My students will Understand that	Guiding Questions Factual Conceptual	
Natural resources, generated by the sun or the Earth and used by humans, provide energy for daily activities. (SC09-GR.5-S3-GLE.1-EO.a)	What natural resources provide energy? (SC09-GR.5-S3-GLE.1; IQ.1,2,3) What are the characteristics of renewable and nonrenewable resources? (SC09-GR.5-S3-GLE.1-EO.b) Where are natural resources found? (SC09-GR.5-S3-GLE.1-EO.b)	How do natural resources provide energy? (SC09-GR.5-S3-GLE.1-EO.b) Why are natural resources not distributed evenly across the earth? (SC09-GR.5-S3-GLE.1; RA.2) Why are some resources nonrenewable? (SC09-GR.5-S3-GLE.1) What are the effects of utilizing nonrenewable resources? (SC09-GR.5-S.3-GLE.1)
Many natural resources provide sources of energy which humans, plants, and animals can harness for consumption. (SC09-GR.5-S.3-GLE.1)	What natural resources provide energy? (SC09-GR.5-S.3-GLE.1-EO.b;IQ.1,2,3;N.1,2)	How do natural resources provide energy? How can the sun be used as an energy source? (SC09-GR.5-S.3-GLE.1; IQ.1) How can the wind be used as an energy source? (SC09-GR.5-S.3-GLE.1; IQ.2) What types of energy sources exist on earth? (SC09-GR.5-S.3-GLE.1; IQ.3)
The physical environment provides opportunities for and places constraints on human activities (SC09-GR.5-S3-GLE.1-EO.b; N.1)	How does the environment affect human activity? How does human activity affect the environment?	What must be done to keep individuals and businesses from negatively affecting the environment?

Humans, more than any other animal, have the power to make decisions that contribute to the protection or endangerment of Earth's environment (RWC10-GR.5-S1-GLE.1-EO.a; IQ.3) and (SC09-GR.5-S3-GLE.1; N.1)

What are some human behaviors which effect the environment? (SC09-GR.5-S3-GLE.1-EO.b;RA.1,2,3; N.1)

Which human behaviors can and cannot be continued if we wish to maintain a healthy environment? (SC09-GR.5-S3-GLE.1-EO.b;RA.1,2,3; N.1)

Critical Content: My students will Know	Key Skills: My students will be able to (Do)
 Renewable or nonrenewable energy sources (SC09-GR.5-S.3-GLE.1) Natural resources used to provide energy (SC09-GR.5-S.3-GLE.1) Examples of nonrenewable resources provided by mining operations (SC09-GR.5-S.3-GLE.1;RA.1) The limited nature of nonrenewable energy sources (SC09-GR.5-S.3-GLE.1) Ways in which the distribution of resources is accomplished to meet human needs SC09-GR.5-S.3-GLE.1; RA.2) The reasons why towns are often built around resource extraction (SC09-GR.5-S.3-GLE.1; RA.3) The variety of renewable and nonrenewable resources the Earth and Sun provide (SC09-GR.5-S.3-GLE.1; N.2) The ways in which the environment affects humans and vice versa. (SS09-GR4-GLE.2; IQ.3) (SC09-GR.5-S3-GLE.1-EO.b; N.1) 	 Develop and communicate an evidence-based scientific explanation (SC09-GR.5-S.3-GLE.1-EO.a) Analyze and interpret data to generate evidence (SC09-GR.5-S.3-GLE.1-EO.b) Review and analyze information presented by peers (SC09-GR.5-S.3-GLE.1; N.1) Provide feedback to peers based on reasonable scientific evidence (SC09-GR.5-S.3-GLE.1; N.1) Assess scientific explanations (SC09-GR.5-S.3-GLE.1-EO.c) Speak clearly and accurately to persuade an audience (RWC10-GR.5-S1-GLE.1-EO.a; IQ.3)

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EXAMPLE: A student in Language Arts can demonstrate the ability to apply and comprehend critical language through the following statement: "Mark Twain exposes the hypocrisy of slavery through the use of satire."

A student in _____ can demonstrate the ability to apply and comprehend critical language through the following statement(s):

Energy on earth is provided from many sources.

Some energy sources are limited.

Technical Vocabulary:

resource, renewable, nonrenewable, extraction

Unit Title	As the Earth Changes		Length of Unit	4 weeks
Focusing Lens(es)	Transformation	Standards and Grade Level Expectations Addressed in this Unit	SC09-GR.5-S.3-GLE.2 SC09-GR.5-S.3-GLE.3	
Inquiry Questions (Engaging- Debatable):	How do changes on the Earth's surface impact humans? (SC09-GR.5-S.3-GLE.2; IQ.2)			
Unit Strands	Earth Science			
Concepts	process, force, change, impact, technology, tectonic, erosion, earth' surface			

Generalizations	Guiding Questions		
My students will Understand that	Factual	Conceptual	
Tectonic and erosional forces change the earth's surface. (SC09-GR.5-S3-GLE.2-EO.a)	What are some tectonic and erosional forces that can change surface of the earth?	How do tectonic and erosional forces work together to form the surface features of the earth? How does Earth's surface change? (SC09-GR.5-S.3-GLE.2; IQ.1)	
Sudden changes as well as changes over geologic time have profound impacts on humans. (SC09-GR.5-S3-GLE.2-EO.a)	What are the forces that cause the Earth's surface to change? (SC09-GR.5-S3-GLE.2; IQ.1)	How have humans learned to adapt to changes to the earth's surface. (SC09-GR.5-S3-GLE.2-I.2) What are the benefits and dangers to humans as the earth's surface changes? (SC09-GR.5-S3-GLE.2; IQ.2)	
Technology can predict changes in the earth's surface. (SC09-GR.5-S3-GLE2; RA.4)	What instruments are used to predict changes in the earth's surface?	How can predicting changes in the earth's surface benefit humans?	

Critical Content: My students will Know	Key Skills: My students will be able to (Do)
 How plate tectonics, erosion, deposition, solar influences, climate, and human activity change the earth's surface (SC09-GR.5-S.3-GLE.2-EO.a) The benefits and dangers to humans as Earth's surface constantly changes (SC09-GR.5-S.3-GLE.2; RA.1) Examples of how communities compensate for the effects of our changing Earth (SC09-GR.5-S.3-GLE.2; RA.2) Details of emergency plans that cities create in order to plan for earthquakes, flooding, volcanic eruptions, tornadoes, and other natural events (SC09-GR.5-S.3-GLE.2; RA.3) The development of technology that led to tools and the establishment of measurement standards (SC09-GR.5-S.3-GLE.2; RA.3) 	 Analyze and interpret data (SC09-GR.5-S.3-GLE.2-EO.a,b) Develop and communicate an evidence based scientific explanation (SC09-GR.5-S.3-GLE.2-EO.b) (SC09-GR.5-S.3-GLE.3-EO.a) Ask testable questions (SC09-GR.5-S.3-GLE.2; N.1) Assess and provide feedback on a peer's scientific explanations (SC09-GR.5-S.3-GLE.2-; N.3)

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A student in ______ can demonstrate the ability to apply and comprehend critical language through the following statement(s):

The earth is constantly changing because of the motion of the tectonic plates, erosion, deposition, and human activity. forces, processes

Technical Vocabulary:

plate, tectonics, erosion, deposition, earthquake, eruption, lava, magma

Unit Title	Weather or Not		Length of Unit	6-8 weeks
Focusing Lens(es)	Change	Standards and Grade Level Expectations Addressed in this Unit	SC09-GR.5-S.3-GLE.3	
Inquiry Questions (Engaging- Debatable):	How has accurate weather prediction allowed for the advancement of society? (SC09-GR.5-S3-GLE.3)			
Unit Strands	Earth Science			
Concepts	weather, condition, change, energy, solar influence, prediction, heat			

Generalizations	Guiding Questions		
My students will Understand that	Factual	Conceptual	
Weather conditions are measureable, and scientists work to measure them in order to make weather predictions. (SC09-GR.5-S3-GLE.3)	What conditions of weather are measurable? (SC09-GR.5-S3-GLE.3-EO.b) What drives the weather?	How do changing conditions affect weather? (SC09-GR.5-S3-GLE.3; N.2) Why would people want to predict weather conditions? (SC09-GR.5-S3-GLE.3; N.2)	
Weather conditions change when the sun heats different surfaces at different rates causing the earth to heat unevenly. (SC09-GR.5-S3-GLE.3; RA.1)	Why does the Sun heat different surfaces at different rates? (SC09-GR.5-S3-GLE.3-IQ.1) Why does weather change from day to day? (SC09-GR.5-S3-GLE.3-IQ.2)	How does the sun's energy impact weather? Why does weather change from day to day? (SC09-GR.5-S.3-GLE.3; IQ.2)	
People can make predictions about weather based on measureable weather conditions. (SC09-GR.5-S.3-GLE.3-EO.b,c; RA.4)	What aspects of weather conditions can be predicted? (SC09-GR.5-S.3-GLE.3-EO.b,c; RA.1)	Why would people want to predict weather conditions? (SC09-GR.5-S.3-GLE.3-EO.b,c; RA.1)	

Critical Content: My students will Know	Key Skills: My students will be able to (Do)
 The constantly changing nature of weather (SC09-GR.5-S.3-GLE.3-EO.a) How air pressure, wind, temperature, and humidity affect daily weather conditions (SC09-GR.5-S.3-GLE.3-EO.b) Tools used to collect weather data used to describe weather conditions (SC09-GR.5-S.3-GLE.3-EO.c-d) The components of the water cycle and how they impact weather (SC09-GR.5-S.3-GLE.3; RA.1) 	 Analyze and interpret data (SC09-GR.5-S.3-GLE.3-EO.a,b) Develop and communicate an evidence based scientific explanation (SC09-GR.5-S.3-GLE.3-EO.a) Assess and provide feedback on a peer's scientific explanations (SC09-GR.5-S.3-GLE.3-; N.3) Gather, analyze, and interpret, data (SC09-GR.5-S.3-GLE.3-EO.b) Describe weather conditions (SC09-GR.5-S.3-GLE.3-EO.c) Use data collections tools to measure weather (SC09-GR.5-S.3-GLE.3-EO.d) Use evidence to support scientific explanations (SC09-GR.5-S.3-GLE.3; N.1)

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A student in can demonstrate the ability to apply and comprehend critical language through the following statement(s):		Changes in weather conditions can be explained using humidity, air pressure, temperature, and wind.		
Academic Vocabulary:	weather, condition, cycle			
Technical Vocabulary:	humidity, air pressure, tempera	ture, wind, water cycle		