

18-19 Curriculum Map: Science Pre-AP / 8th Grade

Unit(s)	Standards	Timeframe	Assessments	Performance Expectations	Disciplinary Core Ideas	Materials/Resources
Growth, Development, and Reproduction of Organisms	LS3.A LS3.B LS4.B Focus Standards (PE): 8-LS3-1 8-LS4-5	Quarter 1	Common Assessment 1: 10-15 question formal assessment Performance Assessment: Week 9	<ul style="list-style-type: none"> 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. Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms. 	<ul style="list-style-type: none"> Inheritance of Traits <ul style="list-style-type: none"> Genes, Chromosomes, Mutations Variation of Traits <ul style="list-style-type: none"> Mutations can be beneficial, harmful, or neutral to the organism. Natural Selection <ul style="list-style-type: none"> Selective Breeding 	<ul style="list-style-type: none"> Strawberry DNA extraction GMO Project
Natural Selection and Adaptations	LS4.A LS4.B LS4.c Focus Standards (PE): 8-LS4-1 8-LS4-2 8-LS4-3 8-LS4-4 8-LS4-6	Quarter 1	Common Assessment 2: 10-15 question formal assessment Performance Assessment 2: Week 9	<ul style="list-style-type: none"> Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past. Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and 	<ul style="list-style-type: none"> Evidence of Common Ancestry and Diversity <ul style="list-style-type: none"> Fossils placement in chronological order Anatomical similarities and differences Natural Selection <ul style="list-style-type: none"> Leads to predominance of certain traits in a population and suppression of other Adaptation <ul style="list-style-type: none"> Natural Selection causes species to change over time in response to changes in environmental 	<ul style="list-style-type: none">

				<p>between modern and fossil organisms to infer evolutionary relationships.</p> <ul style="list-style-type: none"> 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. 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. Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in population over time. 	<p>conditions.</p>	
Energy	<p>PS3.A PS3.C</p> <p>Focus Standards (PE): 8-PS3-1 8-PS3-2</p>	Quarter 2	<p>Common Assessment 3: 10-15 question formal assessment</p> <p>Performance Assessment 3:</p>	<ul style="list-style-type: none"> 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. Develop a model to describe that when the 	<ul style="list-style-type: none"> Definitions of Energy <ul style="list-style-type: none"> - Kinetic and Potential Energy Relationship between Energy and Forces <ul style="list-style-type: none"> - When two objects interact, each one can cause energy to be transferred to or from the object 	<ul style="list-style-type: none">

				arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.		
Space Systems	ESS1.A ESS1.B Focus Standards (PE): 8-ESS1-1 8-ESS1-2 8-ESS1-3	Quarter 2 Quarter 3	Common Assessment 4: 10-15 questions (Formal Assessment) Performance Assessment:	<ul style="list-style-type: none"> • Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons. • Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. • Analyze and interpret data to determine scale properties of objects in the solar system. 	<ul style="list-style-type: none"> • The Universe and its stars <ul style="list-style-type: none"> - Patterns of the apparent motion of the sun, moon, and stars in the sky can be observed, described, predicted, and explained with models. - Milky Way Galaxy • Earth and the Solar System <ul style="list-style-type: none"> - Solar system consists of sun and collection of objects. - Seasons, Eclipses - Formation of Solar System 	•
History of Earth	ESS1.C Focus Standards (PE): 8-ESS1-4	Quarter 3	Common Assessment 4: 10-15 questions (Formal Assessment) Performance Assessment:	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • The History of Planet Earth <ul style="list-style-type: none"> - Geologic time scale provides way to organize Earth's history. 	•
Waves and Electromagnetic Radiation	PS4-A PS4.B Focus Standards (PE): 8-PS4-1 8-PS4-2 8-PS4-3	Quarter 4	Common Assessment 4: 10-15 questions (Formal Assessment) Performance Assessment:	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Wave Properties <ul style="list-style-type: none"> - A simple wave has a repeating pattern with a specific wavelength, frequency, and amplitude. - A sound wave needs a medium through which it is transmitted. 	•

				<ul style="list-style-type: none"> • Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. • 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. 	<ul style="list-style-type: none"> • Electromagnetic Radiation <ul style="list-style-type: none"> - Reflection, absorption, transmission - Characteristics of light waves • Information Technologies and Instrumentation <ul style="list-style-type: none"> - Digitized signals are a more reliable way to encode and transmit information. , 	
Forces and Interaction	PS2.A PS2.B Focus Standards (PE): 8-PS2-1 8-PS2-2 8-PS2-3 8-PS2-4 8-PS2-5	Quarter 4	Common Assessment 4: 10-15 questions (Formal Assessment) Performance Assessment:	<ul style="list-style-type: none"> • Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects. • 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. • Ask questions about data to determine the factors that affect the strength of electric and magnetic forces. • Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects. • Conduct an 	<ul style="list-style-type: none"> • Forces and Motion <ul style="list-style-type: none"> - Newton's 3rd Law • Types of Interactions <ul style="list-style-type: none"> - Electric and Magnetic forces - Gravitational forces - Force Fields 	•

				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.		
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