

Trinity Area School District

Course: Honors Life Science Grade: 7	Overview of Course Advanced 7 th grade science has the same curriculum units as all the other 7 th grade science classes. In addition to those units, the advanced students will do several labs that are an extension of the unit currently being taught and make conclusions from data collected. We will be doing more critical and higher-level thinking activities, as well as writing arguments based on discipline-specific content. The objective tests for this class are longer than the traditional test, have a higher difficulty in questions and usually contain a short answer or essay type question section. This class will move at a faster pace and be more in depth. All homework is to be done outside of class. The students will work in cooperative groups and have opportunities to use their lab techniques and follow safety rules from the beginning of the year.
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Overarching Big Ideas, Enduring Understandings, and Essential Questions

(These “spiral” throughout the entire curriculum.)

Big Idea (A Big Idea is typically a noun and always transferable within and among content areas.)	Standard(s) Addressed (What Common Core Standard(s) and/or PA Standard(s) addresses this Big Idea?)	Enduring Understanding(s) (SAS refers to Enduring Understandings as “Big Ideas.” EUs are the understandings we want students to carry with them after they graduate. EUs will link Big Ideas together. Consider having only one or two EUs per Big Idea.)	Essential Question(s) (Essential Questions are broad and open ended. Sometimes, EQs can be debated. A student’s answer to an EQ will help teachers determine if he/she truly understands. Consider having only one or two EQs per Enduring Understanding.)
(The first overarching Big Idea goes here.) Change	(The Common Core Standard(s) and/or PA Standard(s) that addresses the first overarching Big Idea goes here.) 3.1.7.B4 Describe how selective breeding and biotechnology can alter the genetic composition of organisms 3.1.7.C1 Describe how natural selection is an underlying factor in a population’s ability to adapt to changes 3.1.7.C2 Explain why the extinction of a species may occur when the environment changes; explain that mutations can alter a gene and are the original source of new	(The Enduring Understanding(s) for the first overarching Big Idea goes here.) Change affects all living and nonliving things. Mutations, selective breeding, natural selection and genetic technologies can change the genetic makeup of an organism. Evidence from geology, fossils, comparative anatomy, vestigial structures,	(The Essential Question(s) for the Enduring Understanding(s) for the first overarching Big Idea goes here.) How does change (natural or human-made) affect organisms and their environment? In what ways can mutations, selective breeding, natural selection and genetic technologies change the genetic makeup of an organism? What evidence supports the theory that

	<p>variations in a population 3.1.7.C3 Identify evidence drawn from geology, fossils and comparative anatomy that provides the basis for the theory of evolution 4.1.7.D Explain how biological diversity relates to the ability of an ecosystem to adapt to change 4.1.7.E Identify factors that contribute to change in natural and human-made systems; explain the processes of primary and secondary succession in a given ecosystem 4.2.7.C Use appropriate tools and techniques to analyze a freshwater environment; Interpret physical, chemical and biological data as a means of assessing the environmental quality of a freshwater environment 4.5.7.C Explain how human actions affect the health of the environment; Identify residential and industrial sources of pollution and their effects on environmental health 4.5.7.D Describe wastes derived from using resources, how the waste is managed and the potential impact on the environment 4.5.7.E Describe how length and degree of exposure to pollutants may affect human health; Identify diseases/conditions that have been associated with exposure to pollutants</p>	<p>developmental and molecular biology support the theory of evolution.</p> <p>The fossil record shows a pattern of increasing diversity and large-scale changes through time.</p> <p>Ecosystems change over time.</p> <p>Natural and human actions can cause an environment to change.</p> <p>Humans, other organisms and population growth can affect the environment.</p>	<p>species have changed over time?</p> <p>How has life on Earth changed over time?</p> <p>What are some ways that natural and human actions cause environmental change?</p> <p>What impact can humans and other organisms have on water, land and air resources?</p> <p>How can change affect the survival of a species?</p>
<p>Biodiversity</p>	<p>3.1.7.A1 Describe the similarities and differences of physical characteristics in diverse organisms 3.1.7.A5 Explain how the cell is the basic</p>	<p>Differences exist among organisms of the same species and among other species.</p> <p>The structures of living things help them</p>	<p>How does biodiversity maintain important ecological processes that help support life on Earth?</p>

	<p>structural and functional unit of living things 3.1.7.B2 Compare sexual reproduction with asexual reproduction 4.1.7.D Explain how biological diversity relates to the viability of ecosystems; compare and contrast monocultures diverse ecosystems; explain how biological diversity relates to the ability of an ecosystems to adapt to change; explain how an adaptation is an inherited structure, function or behavior that helps an organism survive and reproduce</p>	<p>function in unique ways. Cells have structures that underlie their function. Living organisms reproduce to ensure the survival of the species.</p>	<p>In your opinion, do all species have a right to exist whether or not they are helpful or harmful to people? How do the structures and processes of a cell enable it to survive? What do the structures in a cell do? How do living things reproduce? How does sexual and asexual reproduction maintain or expand the biodiversity of an ecosystem?</p>
<p>Survival</p>	<p>3.1.7.A1 Describe the similarities and differences of physical characteristics in diverse organisms 3.1.7.A3 Explain why the life cycles of different organisms have varied lengths 3.1.7.A4 Explain how cells arise from pre-existing cells 3.1.7.B1 Explain how genetic instructions influence inherited traits 3.1.7.B2 Compare sexual reproductions with asexual reproduction 3.1.7.C1 Describe how natural selection is an underlying factor in a population's ability to adapt to changes 3.1.7.C2 Explain why the extinction of a species may occur when the environment changes; explain that mutations can alter a gene and are the original source of new variations in a population 4.1.7.A Describe symbiotic and predator/prey relationships 4.5.7.C Explain how human actions affect the</p>	<p>Organisms have adaptations (inherited and behavioral) that help them to survive and reproduce in their particular environment. Cells arise from pre-existing cells. Living things reproduce to ensure the survival of a species. Differences exist among organisms of the same species and among other species. Variations in individuals may give them an advantage for survival. Environmental change can affect the survival of a species. Environmental change can cause a species to become threatened, endangered or extinct.</p>	<p>How do adaptations allow for survival? How does the cell theory support the idea of survival? How and why do living things reproduce? How does sexual reproduction and asexual reproduction maintain or expand the biodiversity of an ecosystem? What role do variations play in an organism's survival? How can change affect the survival of a species? Why is cell division important for multicellular organisms?</p>

	<p>health of the environment 4.5.7.E Describe how length and degree of exposure to pollutants may affect human health; identify diseases/conditions that have been associated with exposure to pollutants</p>		
Systems/Cycles	<p>3.1.7.A3 Explain why the life cycles of different organisms have varied lengths 3.1.7.A6 Identify the levels of organization from cell to organism 3.1.7.A7 Compare life processes at the organism level with life processes at the cellular level 4.1.7.A Describe the relationship between biotic and abiotic components of an ecosystem 4.1.7.B Explain biochemical cycles within an ecosystem 4.1.7.C Explain the flow of energy within an ecosystem; compare and contrast the flow of energy between organisms in different habitats; explain the concept of trophic levels 4.1.7.E Identify factors that contribute to change in natural and human-made systems</p>	<p>There is order in a system.</p> <p>There are levels of organization from cell to organism.</p> <p>Life cycles of different organisms have varied lengths.</p> <p>There are life processes at the cell level and at the organism level.</p> <p>Cell cycles, reproductive cycles and life cycles exist.</p> <p>Energy and matter flow through and support life within an ecosystem.</p> <p>Humans, other organisms and population growth can affect the environment.</p>	<p>Why is there order in a system?</p> <p>How does cell differentiation lead to organization within a multicellular organism?</p> <p>Why do organisms have varied life cycles lengths?</p> <p>Why is the cell cycle important in multicellular organisms?</p> <p>How does energy and matter flow within an ecosystem?</p> <p>What impact can humans and other organisms have on water, land and air resources?</p>
Inquiry	<p>3.1.7.A9, 3.1.7.B6, 3.1.7.CD4, 4.1.7.F, 4.2.7.D, 4.4.7.E, 4.5.7.F</p> <ul style="list-style-type: none"> • Understand how theories are developed. • Identify questions that can be answered through scientific investigations and evaluate the appropriateness of questions. 	<p>Science provides answers to your questions about the world around you.</p> <p>Life scientists use tools, materials and techniques to study materials.</p>	<p>How can scientific inquiry provide answers to your questions about the world around you?</p> <p>How is scientific inquiry used in a real-life scientific investigation?</p>

	<ul style="list-style-type: none"> • Design and conduct a scientific investigation and understand that current scientific knowledge guides scientific investigations. • Describe relationships using inference and prediction. • Use appropriate tools and technologies to gather, analyze, and interpret data and understand that it enhances accuracy and allows scientists to analyze and quantify results of investigations. • Develop descriptions, explanations, and models using evidence and understand that these emphasize evidence, have logically consistent arguments, and are based on scientific principles, models, and theories. • Analyze alternative explanations and understanding that science advances through legitimate skepticism. • Use mathematics in all aspects of scientific inquiry. • Understand that scientific investigations may result in new ideas for study, new methods, or procedures for an investigation or new technologies to improve data collection 	<p>Models can be used to predict results and observations.</p> <p>Observations can be interpreted and used to form inferences which can provide evidence to support or reject hypotheses or predictions.</p>	<p>What is scientific inquiry?</p> <p>What are some tools used by life scientists?</p> <p>How do life scientists use instruments and apparatus to study materials?</p> <p>Why do we use models?</p> <p>How can models be used to predict results and observations?</p> <p>What real-life model could you compare a cell to?</p> <p>How can observations be utilized?</p> <p>In your opinion, what kind of evidence is best for scientists to have?</p>
Energy	<p>3.1.7.A2 Describe how organisms obtain and use energy throughout their lives</p> <p>4.1.7.C Explain the flow of energy within an ecosystem; compare and contrast the flow of energy between organisms in different habitats; explain the concept of trophic levels</p>	<p>Organisms obtain and use energy throughout their life.</p> <p>Energy and matter flow through and support life within an ecosystem.</p>	<p>How do organisms obtain and use energy throughout their life?</p> <p>How does energy and matter flow within an ecosystem?</p>
Patterns	<p>3.1.7.B1 Explain how genetic instructions influence inherited traits; identify Mendelian patterns of inheritance</p>	<p>Organisms inherit traits in patterns.</p> <p>Patterns of heredity can be predicted.</p>	<p>How are traits inherited?</p> <p>How are patterns of inheritance studied?</p>

	<p>3.1.7.B5 Compare and contrast observable patterns in the physical characteristics across families, strains and species</p> <p>3.1.7.C3 Identify evidence drawn from geology, fossils and comparative anatomy that provides the basics for the theory of evolution</p>	<p>There are different forms of patterns and they are used to group and classify specific objects.</p> <p>Evidence from geology, fossils, comparative anatomy, vestigial structures, developmental and molecular biology support the theory of evolution.</p> <p>The fossil record shows a pattern of increasing diversity and large-scale changes through time.</p>	<p>How do some patterns of inheritance differ from Mendel's model? How are patterns used to group and classify living things?</p> <p>What evidence from living species supports the theory that species have descended from other species over time?</p> <p>How are Earth's organisms related?</p> <p>How has life on Earth changed over time?</p>
<p>Evidence</p>	<p>3.1.7.A1 Describe the similarities and differences of physical characteristics in diverse organisms</p> <p>3.1.7.A4 Explain how cells arise from pre-existing cells</p> <p>3.1.7.C3 Identify evidence drawn from geology, fossils and comparative anatomy that provides the basics for the theory of evolution</p>	<p>New information may change existing theories and practice.</p> <p>Cells arise from pre-existing cells.</p> <p>Evidence from geology, fossils, comparative anatomy, vestigial structures, developmental and molecular biology support the theory of evolution.</p> <p>The fossil record shows a pattern of increasing diversity and large-scale changes through time.</p>	<p>How do scientific discoveries and inventions change how organisms are classified?</p> <p>How did microscopes change our ideas about living things?</p> <p>How does the cell theory support the idea of survival?</p> <p>What evidence from living species supports the theory that species have descended from other species over time?</p> <p>How are Earth's organisms related?</p> <p>How has life on Earth changed over time?</p>

Big Ideas, Enduring Understandings, and Essential Questions Per Unit of Study
 (These do NOT “spiral” throughout the entire curriculum, but are specific to each unit.)

Month of Instruction (In what month(s) will you teach this unit?)	Title of Unit	Big Idea(s) (A Big Idea is typically a noun and always transferable within and among content areas.)	Standard(s) Addressed (What Common Core Standard(s) and/or PA Standard(s) addresses this Big Idea?)	Enduring Understanding(s) (SAS refers to Enduring Understandings as “Big Ideas.” EUs are the understandings we want students to carry with them after they graduate. EUs will link Big Ideas together. Consider having only one or two EUs per Big Idea.)	Essential Question(s) (Essential Questions are broad and open ended. Sometimes, EQs can be debated. A student’s answer to an EQ will help teachers determine if he/she truly understands. Consider having only one or two EQs per Enduring Understanding.)	Common Assessment(s)* (What assessments will all teachers of this unit use to determine if students have answered the Essential Questions?)	Common Resource(s)* Used (What resources will all teachers of this unit use to help students understand the Big Ideas?) Teachers: Please pick and choose from the resources listed below.
August/ September	Introduction to Science	Inquiry	3.1.7.A9, 3.1.7.B6, 3.1.7.CD4, 4.1.7.F, 4.2.7.D, 4.4.7.E, 4.5.7.F • Understand how theories are developed. • Identify questions that can be answered through scientific investigations and evaluate the appropriateness of	Science provides answers to your questions about the world around you. Life scientists use tools, materials and techniques to study	What is scientific inquiry? How can scientific inquiry provide answers to your questions about the world around you? How is scientific inquiry used in a real-life scientific investigation? What are some tools used by life scientists?	Teacher observation Classroom participation Lab Safety Test Lab Equipment Quiz Observation vs. Inference Quiz	Online textbook: McGraw Hill Life Science Supplemental materials: Brain Pop – Scientific Methods Roots, Prefixes and Suffixes Classroom Presentation Toolkit – Scientific

			<p>questions.</p> <ul style="list-style-type: none"> • Design and conduct a scientific investigation and understand that current scientific knowledge guides scientific investigations. • Describe relationships using inference and prediction. • Use appropriate tools and technologies to gather, analyze, and interpret data and understand that it enhances accuracy and allows scientists to analyze and quantify results of investigations. • Develop descriptions, explanations, and models using evidence and understand that these emphasize evidence, have logically consistent arguments, and are based on scientific 	<p>materials.</p> <p>Models can be used to predict results and observations.</p> <p>Observations can be interpreted and used to form inferences which can provide evidence to support or reject hypotheses or predictions.</p>	<p>How do life scientists use instruments and apparatus to study materials?</p> <p>Why do we use models?</p> <p>How can models be used to predict results and observations?</p> <p>How can observations be utilized?</p> <p>In your opinion, what kind of evidence is best for scientists to have?</p>	<p>Observation Drawing Scientific Inquiry Quiz</p> <p>Identifying Variables Quiz</p> <p>Bellringer</p> <p>Science Probes – Scientific Explanations Pre Assessment</p> <p>Stem Lab: We’re Gonna Need a Bigger Boat</p> <p>Appealing the Verdict - Opposing Viewpoints Assessment</p> <p>Thinkets – Collins Type 3 Writing</p>	<p>Explanations PowerPoint Concepts in Motion – SI Base Units</p> <p>Science Court – Data and Analysis Computer Simulation</p> <p>Vocabulary eGames eFlashcards, Puzzlemaker</p> <p>Active Folders - Measurement</p> <p>Skill Activity: Designing and Experiment to Test a Hypothesis</p> <p>Interactive Whiteboard Strategy: Scientific Theory vs. Scientific Law</p> <p>Virtual Labs – What strategies are involved in solving a science problem?</p> <p>WebQuest – Just the Facts (Finding Bias)</p>
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			<p>principles, models, and theories.</p> <ul style="list-style-type: none"> • Analyze alternative explanations and understanding that science advances through legitimate skepticism. • Use mathematics in all aspects of scientific inquiry. • Understand that scientific investigations may result in new ideas for study, new methods, or procedures for an investigation or new technologies to improve data collection <p>CC. 3.6.7 A Write arguments focused on discipline-specific content</p> <p>CC. 3.6.7.B Write informative/ explanatory texts, including scientific procedures/ experiments</p> <p>CC.3.5.7.C Follow</p>				<p>Stem Lab: We're Gonna Need a Bigger Boat</p> <p>Thinkets</p>
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			<p>precisely a multistep procedure when carrying out experiments, taking measurements or performing technical tasks</p> <p>7.SP.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations</p> <p>7.SP.8b Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams</p> <p>7.RP.2 Recognize and represent proportional relationships between quantities</p>				
September/ October	Living Things &	Biodiversity /Evidence	3.1.7. A1 Describe the similarities and	Dichotomous keys are used to identify	How are similarities and differences used to	Teacher observation	Textbook: <i>McGraw Hill Life: Structure</i>

	Classification		<p>differences of physical characteristics in diverse organisms.</p>	<p>living things</p>	<p>identify living things using a dichotomous key?</p>	<p>Classroom participation</p>	<p><i>and Function</i></p>
		Patterns	<p>3.1.7.B5 Compare and contrast observable patterns in the physical characteristics across families, strain and species</p>	<p>New information may change existing theories and practice.</p> <p>There are different forms of patterns and they are used to group and classify specific objects</p>	<p>What methods are used to classify living things into groups?</p> <p>How do scientific discoveries and inventions change how organisms are classified?</p> <p>How did microscopes change our ideas about living things?</p> <p>How are patterns used to group and classify living things?</p>	<p>Chapter Test</p> <p>Microscope Lab</p> <p>Microscope Quiz</p> <p>Bellringer</p> <p>Science Probes: Classification Systems Pre Assessment</p> <p>Mascot Mystery – A Tale of Microscopic Mayhem</p> <p>Thinkets – Collins Type 3 Writing</p>	<p>Online textbook</p> <p>Supplemental materials: Brain Pop – Six Kingdoms, Classification, Microscopes</p> <p>Skill Activity: Classifying – Dichotomous Key</p> <p>Observing and Inferring – Classification</p> <p>Lab experiments - Stimulus/ Response Lab, How Can You Identify a Beetle - Dichotomous Key Lab, Classification Lab, Is It Alive Lab,</p>
		Survival	<p>3.1.7.B2 Compare sexual reproduction with asexual reproduction</p> <p>CC 3.5.7.A Cite specific textual evidence to support analysis of science</p>	<p>Living things reproduce to ensure the survival of the species.</p>	<p>How and why do living things reproduce?</p>		<p>Concepts in Motion – Frog’s Life Cycle, Characteristics of Life, Cladistics Method, Simple Microscope</p> <p>Vocabulary eFlashcards, eGames,</p>

			<p>and technical texts</p> <p>CC.3.5.7.C Follow precisely a multistep procedure when carrying out experiments, taking measurements or performing technical tasks</p> <p>CC. 3.6.7 A Write arguments focused on discipline-specific content</p> <p>CC. 3.6.7.B Write informative/ explanatory texts, including scientific procedures/ experiments</p> <p>7.SP.8b Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams</p>				<p>Puzzlemaker</p> <p>PowerPoint Presentations - Classification Notes</p> <p>Classroom Presentation Toolkit: Classifying and Exploring Life</p> <p>Active Folders - Classification</p> <p>WebQuests - Classifying and Comparing Worms</p> <p>Virtual Labs - How Are Living Things Classified into Groups?</p> <p>Interactive Whiteboard Strategies - Classifying Living Things</p> <p>Computer cart</p> <p>Foldables - Characteristics of Life, Compare Dichotomous Keys and Cladograms,</p>
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		<p>Patterns</p> <p>3.1.7.A6 Identify the levels of organization from cell to organism</p>	<p>There is order in a system.</p> <p>There are levels of organization from cell to organism.</p>	<p>What real-life model could you compare a cell to?</p> <p>How does cell differentiation lead to the organization within a multicellular organism?</p>	<p>Chromatography: Exploring the Color of Plants Lab</p> <p>Thinkets - Collins Type 3 Writing</p>	<p>Presentations - History of Cell Discovery, Organelles, Photosynthesis/Cellular Respiration, Moving Cellular Materials,</p> <p>Classroom Presentation Toolkit - Cell Structure and Function, From a Cell to an Organism</p> <p>Differentiation - Cell Parts 2-5-8 Menu, Photosynthesis 20-50-80 Menu, Levels of Organization Menu</p> <p>Models - Build a Cell, Cell Analogy Project</p> <p>Skill Activity: Interpreting Scientific Illustrations - Cells</p> <p>Demonstrations - Photosynthesis</p>
		<p>Cycles</p> <p>3.1.7.A7 Compare life processes at the organism level with processes at the cellular level</p> <p>CC.3.5.7.C Follow precisely a multistep procedure when carrying out experiments, taking measurements or performing technical tasks</p> <p>CC. 3.6.7 A Write arguments focused on discipline-specific content</p> <p>CC. 3.6.7.B Write informative/explanatory texts, including scientific procedures/</p>	<p>There are life processes at the cell level and at the organism level.</p> <p>Cell, reproductive and life cycles exist.</p>	<p>What life processes occur at the cellular level?</p> <p>Why is the cell cycle important?</p> <p>Why is cell division important for multicellular organisms?</p>		

			<p>experiments</p> <p>7.SP.8b Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams</p> <p>7.G.6 Solve real-world mathematical problems involving area, volume, and surface area of two- or three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes and right prisms</p> <p>7.RP.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units</p> <p>7.RP.2b identify the constant of</p>				<p>Lab experiments – Hooke’s Cells Lab, Osmosis/Diffusion Lab, Launch Lab – DNA Codes, Wet Mount: Animal/Plant Cell Comparison Lab, What Do You Exhale Lab</p> <p>Virtual Labs – Under What Conditions Do Cells Gain or Lose Water?</p> <p>Concepts in Motion – Interactive Concept Map: Cell, Animal Cell, Plant Cell, Facilitated Diffusion, Active Transport</p> <p>Personal Tutor – Photosynthesis and Cellular Respiration</p> <p>Vocabulary eFlashcards eGames, Puzzlemaker</p> <p>Active Folders – Cell Structure, Cell Processes</p>
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			<p>proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships</p> <p>7.RP.3 Use proportional relationships to solve multistep ratio and percent problems</p>				<p>Foldables – Macromolecules, Cell Organelles, Passive Transport/Active Transport, Types of Energy Production</p> <p>Computer cart</p> <p>Why Are Cells So Small Lab</p> <p>Chromatography: Exploring the Color of Plants Lab</p> <p>Thinkets</p>
December	Reproduction	Survival/ Biodiversity	<p>3.1.7.B2 Compare sexual reproduction with asexual reproduction</p> <p>3.1.7.B4 Describe how selective breeding and biotechnology can alter the genetic</p>	<p>Living organisms reproduce to ensure the survival of the species.</p> <p>Differences exist among organisms of the same species and among other species.</p> <p>Selective breeding and genetic technologies can change the genetic makeup of an</p>	<p>How do living things reproduce?</p> <p>How does sexual and asexual reproduction maintain or expand the biodiversity of an ecosystem?</p> <p>In what ways can selective breeding and genetic technologies change the genetic makeup of an organism?</p>	<p>Teacher observation</p> <p>Classroom participation</p> <p>Science Probes - Reproduction Pre Assessment</p> <p>Bellringers</p> <p>Chapter Test</p> <p>Concept Map</p> <p>Mitosis/Meiosis</p>	<p>Textbook: McGraw Hill Life: Structure and Function</p> <p>Online textbook, Textbook</p> <p>Supplemental materials: Brain Pop - Asexual Reproduction, Mitosis</p> <p>PowerPoint Presentations - Types of Reproduction,</p>

			<p>composition of organisms</p> <p>CC.3.5.7.C Follow precisely a multistep procedure when carrying out experiments, taking measurements or performing technical tasks</p> <p>CC. 3.6.7 A Write arguments focused on discipline-specific content</p> <p>CC. 3.6.7.B Write informative/explanatory texts, including scientific procedures/experiments</p>	<p>organism.</p>		<p>Comparison Chart</p> <p>My Fruit is Alive...? DNA Extraction Lab</p> <p>Thinkets – Collins Type 3 writing</p>	<p>Mitosis</p> <p>Classroom Presentation Toolkit: Reproduction of Organisms</p> <p>Differentiation – Mitosis/Meiosis Tic-Tac-Tie Menu</p> <p>Lab experiments – Mitosis Lab</p> <p>Interactive Whiteboard Strategy – Mitosis</p> <p>Concepts in Motion – Interactive Concept Map – Cell Cycle, Mitosis, Phases of the Cell Cycle, Cell Organization</p> <p>Personal Tutor – Cell Structure and Function</p> <p>Vocabulary eFlashcards eGames, Puzzlemaker</p>
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							Active Folders – Mitosis/Meiosis, Human Body Systems (Levels of Organization) Computer cart Foldables – The Cell Cycle, Levels of Organization My Fruit is Alive...? DNA Extraction Lab Thinkets
						MIDTERM EXAM	
January/ February	Genetics	Patterns	3.1.7.B1 Explain how genetic instructions influence inherited traits; identify Mendelian patterns of inheritance 3.1.7.B5 Compare and contrast observable patterns in the physical characteristics across families, strains and species	Organisms inherit traits in patterns. Patterns of heredity can be predicted.	How are traits inherited? How are patterns of inheritance studied? How do some patterns of inheritance differ from Mendel's model?	Teacher observation Classroom participation Bellringers Science Probes – Bunnies Pre Assessment Basic Genetics Quiz Pedigree Quiz	Textbook: McGraw Hill Life: Structure and Function, Online textbook Supplemental materials: Brain Pop – Genetics, Basic Probability, Genetic Mutations, Twins Gender Determination Bill Nye DVDs – Probability, Genes, Genetically Modified Food
		Change	3.1.7.C2 Explain	Mutations can	In what ways can	Incomplete	

			<p>that mutations can alter a gene and are the original source of new variations in a population</p> <p>CC.3.5.7.C Follow precisely a multistep procedure when carrying out experiments, taking measurements or performing technical tasks</p> <p>CC. 3.6.7 A Write arguments focused on discipline-specific content</p> <p>CC. 3.6.7.B Write informative/explanatory texts, including scientific procedures/experiments</p>	<p>change the genetic makeup of an organism.</p>	<p>mutations change the genetic makeup of an organism?</p>	<p>Dominance and Codominance Quiz</p> <p>Multiple Alleles Quiz</p> <p>All in the Family Project</p> <p>Thinkets - Collins</p> <p>Type 3 Writing</p>	<p>PowerPoint Presentations - Genetics</p> <p>Classroom Presentation Toolkit: Genetics</p> <p>Models - Punnett Squares</p> <p>Lab experiments - Incomplete Dominance/Codominance Lab, Multiple Alleles Lab, Gender Determination Lab</p> <p>Concepts in Motion - Results of Hybrid Crosses, Widow's Peak, Punnett Square, Polygenic Inheritance, DNA, DNA Replication, Map an organism's traits</p> <p>Vocabulary eFlashcards, eGames, Puzzlemaker</p> <p>Active Folders - Plant, Heredity and</p>
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							<p>Genetics</p> <p>Virtual Labs – How are traits passed from parent to offspring? Interactive Whiteboard Strategy – Interactive Punnett Square</p> <p>Computer cart</p> <p>Dihybrid Cross Punnett Squares</p> <p>You’ve Come a Long Way Dolly Cloning Activity</p> <p>Finding a Gene on the Chromosome Map Activity</p> <p>Pick the Risk: The Polygenic Pedigree Challenge</p> <p>Thinkets</p>
March/ April	Change Over Time	Change/ Survival	3.1.7.C1 Describe how natural selection is an underlying factor in a population’s ability to adapt to	Organisms have adaptations (inherited and behavioral) that help them to survive and	How do adaptations allow for survival? How do species adapt to changing environments over time?	Teacher observation Classroom participation	<p>Textbook: <i>McGraw Hill Life: Structure and Function</i></p> <p>Online textbook</p>

		<p>changes 3.1.7.D Explain how an adaptation is an inherited structure, function or behavior that helps an organism survive and reproduce</p> <p>3.1.7.C2 Explain why the extinction of a species may occur when the environment changes; explain that mutations can alter a gene and are the original source of new variations in a population</p> <p>3.1.7.B4 Describe how selective breeding can alter the genetic composition of organisms</p> <p>3.1.7.C3 Identify evidence drawn from geology, fossils and comparative</p>	<p>reproduce in their particular environment.</p> <p>Environmental change can affect the survival of a species.</p> <p>Variations in individuals may give them an advantage in survival.</p> <p>Selective breeding can change the genetic makeup of an organism.</p> <p>Evidence from geology, fossils, comparative anatomy, vestigial structures, developmental and molecular biology support the theory of evolution.</p> <p>The fossil record shows a pattern of</p>	<p>What role do variations play in an organism's survival?</p> <p>In what ways can selective breeding change the genetic makeup of an organism and how does this cause variation?</p> <p>What evidence supports the theory that species have changed over time?</p> <p>How has life on Earth changed over time?</p>	<p>Bellringers</p> <p>Fossils Quiz</p> <p>Skills Practice – Inferring</p> <p>Science Probes – Tree Snails Pre Assessment</p> <p>Chapter Test</p> <p>How Old is That Fossil?</p> <p>Radioactive Dating Lab</p> <p>Galapagos Finches: Famous Beaks Lab</p> <p>Thinkets – Collins Type 3 Writing</p>	<p>Supplemental materials: Brain Pop – Fossils, Geologic Time scale, Charles Darwin, Natural Selection, Human Evolution, Dinosaurs</p> <p>PowerPoint Presentations – Fossils and the Law of Superposition</p> <p>Classroom Presentation Toolkit: The Environment and Change Over Time</p> <p>Science Court – Fossils Computer Simulation</p> <p>Virtual Field Trip – Take a Trip with Charles Darwin</p> <p>WebQuest – What did T. rex taste like?</p> <p>Bill Nye DVDs – Fossils, Evolution</p> <p>Video: What's</p>
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			<p>anatomy that provides the basics for the theory of evolution.</p> <p>CC.3.5.7.C Follow precisely a multistep procedure when carrying out experiments, taking measurements or performing technical tasks</p> <p>CC. 3.6.7 A Write arguments focused on discipline-specific content</p> <p>CC. 3.6.7.B Write informative/explanatory texts, including scientific procedures/experiments</p> <p>7.SP.8b Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams</p> <p>7.RP.2 Recognize</p>	<p>increasing diversity and large-scale changes through time.</p>			<p>Science Got to Do With It: Killer Bees</p> <p>Lab experiments – Variations within Your Class Lab, Structure of a Spoon Lab, Natural Selection Lab</p> <p>Skills Activity: Interpreting Data – Dinosaurs, Making and Using Graphs – Variations, Observing and Inferring – Adaptations (2), Observing and Inferring – Fossils</p> <p>Concepts in Motion – Biological Evolution,</p> <p>Personal Tutor – Geologic Time Scale, Natural Selection</p> <p>Vocabulary eFlashcards, eGames, Puzzlemaker</p> <p>Active Folders –</p>
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			<p>and represent proportional relationships between quantities</p> <p>7.NS.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers</p>				<p>Adaptations</p> <p>WebQuests - Origin of Birds</p> <p>Virtual Labs - How can fossil and rock data determine when an organism lived?</p> <p>Computer cart</p> <p>Galapagos Finches: Famous Beaks Lab</p> <p>Thinkets</p>
<p>April/ May/ June</p>	<p>Environmental Science</p>	<p>Interdependence</p>	<p>4.1.7.A Describe the relationships between biotic and abiotic components of an ecosystem; compare and contrast different biomes and their characteristics; describe symbiotic and predator/prey relationships</p>	<p>Change affects all living and nonliving things.</p> <p>Organisms interact with each other and the nonliving parts of their environment.</p> <p>Populations are shaped by interactions between organisms and the environment and may change.</p>	<p>How does change (natural or human-made) affect organisms and their environment?</p> <p>How are different parts of the environment connected?</p> <p>How do organisms interact?</p>	<p>Teacher observation</p> <p>Classroom participation</p> <p>Bellringers</p> <p>Science Probes - Wet Jeans Pre Assessment, Cycling of Matter Pre Assessment, Populations and Communities, Burning Coal Pre Assessment, Desert Descriptions Pre</p>	<p>Textbook: <i>McGraw Hill Interactions of Life</i></p> <p>Online textbook</p> <p>Supplemental materials: Brain Pop - Ecosystems, Water Cycle, Global Warming, Nitrogen Cycle, Carbon Cycle, Food Chains, Energy Pyramids, Population Growth, Symbiosis, Land Biomes, Freshwater Habitats, Ocean Habitats, Air</p>

		Cycles/ Energy	<p>4.1.7.B Explain biochemical cycles within an ecosystem</p> <p>4.1.7.C Explain the flow of energy within an ecosystem; compare and contrast the flow of energy between organisms in different habitats; explain the concept of trophic levels</p>	Energy and matter flow through and support life within an ecosystem.	How does energy and matter flow within an ecosystem?	Assessment	Pollution
		Biodiversity	<p>4.1.7.D Explain how biodiversity relates to the viability of ecosystems; Compare and contrast monocultures with diverse ecosystems; explain how biodiversity relates to the ability of an ecosystem to adapt to change</p>	<p>Differences exist among organisms of the same species and among other species.</p> <p>Exotic, introduced and invasive species affect the native species in an ecosystem</p>	<p>How does biodiversity maintain important ecological processes that help support life on Earth?</p> <p>In your opinion, do all species have a right to exist whether or not they are helpful or harmful to people?</p> <p>How do nonnative species affect the native species in an ecosystem?</p>	<p>Chapter Test</p> <p>Appealing the Verdict – Opposing Viewpoints Assessment</p> <p>Ecology: Biorama</p> <p>Tree Identification Assessment</p> <p>Thinkets – Collins Type 3 Writing</p>	<p>Science Court – Soil, Water Cycle Computer Simulations</p> <p>Lab experiments – Determining Population Size Lab, Bearly Enough (Carrying Capacity) Lab, Living or Nonliving Lab, Good Buddies Activity</p> <p>PowerPoint Presentations- Energy Flow in Ecosystems, Populations, Levels of Organization, Species Interaction</p> <p>Classroom Presentation Toolkit: Matter and the Environment, Populations and Communities, Using Natural Resources (only part on Pollution), Biomes and Ecosystems</p> <p>Bill Nye DVDs –</p>
		Change/ Systems	4.1.7.E Identify factors that contribute to	Humans, other organisms and population growth	What impact can humans and other organisms have on water, land and air		

			<p>change in natural and human-made systems; explain the processes of primary and secondary succession in a given ecosystem 4.2.7.C Use appropriate tools and techniques to analyze a freshwater environment; Interpret physical, chemical and biological data as a means of assessing the environmental quality of a freshwater environment 4.5.7.C Explain how human actions affect the health of the environment; Identify residential and industrial sources of pollution and their effects on environmental health</p> <p>CC.3.5.7.C Follow precisely a multistep</p>	<p>can affect the environment.</p> <p>Natural and human actions can cause an environment to change. Ecosystems change over time.</p> <p>Environmental change can cause a species to become threatened, endangered or extinct.</p>	<p>resources?</p> <p>What are some ways that natural and human actions cause environmental change? How can change affect the survival of a species?</p>		<p>Food Webs, Populations, Pollution Solutions</p> <p>Video: What's Science Got to Do With It: Cleaning Crew</p> <p>Skill Activity: Interpreting Scientific Illustrations and Data – Ecosystems, Predicting – Populations</p> <p>Promethean boards- Food Chains and Food Webs DVD – New Path Learning</p> <p>Concepts in Motion – Interactive Map – Ecosystems, Population Size, Ecosystems and Biomes The Carbon Cycle, Greenhouse Effect, The Nitrogen Cycle, The Water Cycle, Food Web, Energy Pyramid</p>
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			<p>procedure when carrying out experiments, taking measurements or performing technical tasks</p> <p>CC3.6.7.A Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources</p> <p>4.4.7.A Describe how agricultural practices, the environment and the availability of natural resources are related.</p> <p>4.5.8.B Describe the impact of pests in different geographic locations and techniques used to manage those pests</p>	<p>Agriculture has a great environmental and economic impact on our society.</p>	<p>How does agriculture affect our society environmentally and economically?</p>		<p>Personal Tutor – Food Web, The Water Cycle, What is pH?</p> <p>Mystery of the Dying Fish Simulation</p> <p>Vocabulary eFlashcards, eGames, Puzzlemaker</p> <p>Active Folders – Ecology, Food Chains/Food Webs/Energy Pyramids</p> <p>Virtual Lab – How do organisms react to changes in Abiotic Factors? How Do Introduced Species Affect the Environment?</p> <p>Computer cart</p> <p>Tree Identification using dichotomous keys</p> <p>Thinkets</p>
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						FINAL EXAM	
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* Some teachers may need to think about the assessments and resources used in order to determine the Big Ideas, Enduring Understandings, and Essential Questions embedded in their courses. At this point in your curriculum mapping, you might want to ignore the “Common Assessments” and “Common Resources Used” columns. However, you may use them if you wish.