

**Course Title: 7th Grade Life Science**

**Board Approval Date: January 17, 2019**

**Credit / Hours: 1.0**

**Course Description:**

The science program in seventh grade is aligned to the 8th grade PSSA assessment anchors and eligible content and PA Science Standards. It will provide text dependent, digital simulations, and hands-on lab based experiments in the following content areas: biological sciences, ecology, watersheds & wetlands, natural resources, agriculture and society, and humans and the environment.

**Learning Activities / Modes of Assessment**

Checklists/Status Report
Collaborative Projects
Construction of Models
Content Assessments
Data Analysis and Graphing
Digital “Posters”/Projects
Digital Simulations
Direct Instruction
Dissections (Introductory)
Do Nows (Bellringers)
Exit Tickets
Extension Activities
Independent Work
Kahoot, Quizziz, & Quizlet
Kinesthetic Activities
Microscope Work
Partner Work
PSSA Released Items
Real World Applications
Schoology Assignments
Science Scenarios
Small Group
Stations (Labs)
Study Island

Teacher-created Case Study  
Teacher Demonstrations  
Teacher Observation  
Text Dependent Analysis

**Instructional Resources:**

Barn Owl Trust  
Biology Corner  
District Approved Apps  
District Assessments  
Lab Materials  
Newsela  
NPR  
Online Practice Tools  
PA SAS Resources  
Science News for Students  
State Standards/Assessment Anchors  
Study Island  
TedEd  
Textbooks  
Video Resources/Enrichment

- Amoeba Sisters
- Life After People
- Nat Geo
- Untamed Science

**Curriculum: Life Science (Biological and Environmental Science)**

**Course: 7th Grade Life Science**

<b>KNOW</b>	<b>UNDERSTAND</b>	<b>DO</b>
<b>Assessment Anchor</b>	<b>Standard</b>	<b>Eligible Content -</b>
<b>S.7.A.1 Reasoning and Analysis</b>	<p><b>S.7.A.1.1</b>                      Explain, interpret, and apply scientific, environmental, or technological knowledge presented in a variety of formats (visuals, scenarios, graphs).</p>	<p><b>S.7.A.1.1.1</b>                      Distinguish between a scientific theory and a general opinion, explaining how a theory is supported with evidence</p> <p><b>S.7.A.1.1.2</b>                      Develop questions that can be answered through scientific inquiry and/or technological design.</p> <p><b>S.7.A.1.1.3</b>                      Use evidence such as observations or experimental results to support inferences.</p> <p><b>S.7.A.1.1.4</b>                      Use evidence to develop descriptions, explanations, and models.</p>
	<p><b>S.7.A.1.2</b>                      Identify and explain the impacts of applying scientific, environmental, or</p>	<p><b>S.7.A.1.2.1</b>                      Describe the positive and negative effects (both intended and unintended) of scientific results or technological</p>

	technological knowledge to address solutions to practical problems.	developments.
	<p><b>S.7.A.1.3</b> Identify and analyze evidence that certain variables may have caused measurable changes in natural or human-made systems.</p>	<p><b>S.7.A.1.3.1</b> Describe how variables can cause changes in a system over time.</p> <p><b>S.7.A.1.3.2</b> Use evidence, observations, or explanations to make inferences about changes in systems over time (e.g., carrying capacity, succession, fossil evidence in geologic time scale).</p>
<b>S.7.A.2 Processes, Procedures, and Tools of Scientific Investigations</b>	<p><b>S.7.A.2.1</b> Apply knowledge of scientific investigation or technological design in different contexts to make inferences, solve problems, and/or answer questions.</p>	<p><b>S.7.A.2.1.1</b> Use evidence from investigations to clearly describe relationships and communicate and support conclusions.</p> <p><b>S.7.A.2.1.2</b> Identify a design flaw in a simple technological system and devise possible working solutions</p>

	<p><b>S.7.A.2.2</b>  Select and safely use appropriate tools and describe the information provided by each tool.</p>	<p><b>S.7.A.2.2.1</b>  Describe the safe and appropriate use of instruments and scales to accurately and safely make measurements under a variety of conditions</p> <p><b>S.7.A.2.2.2</b>  Apply measurement systems to record and interpret observations under a variety of conditions.</p> <p><b>S.7.A.2.2.3</b>  Describe ways technology is used to enhance scientific study and/or human life.</p>
<p><b>S.7.B.1 Structure and Functions of Organisms</b></p>	<p><b>S.7.B.1.1</b>  Describe and compare structural and functional similarities and differences that characterize diverse living things</p>	<p><b>S.7.B.1.1.1</b>  Describe levels of biological organization from cell to organism</p> <p><b>S8.B.1.1.4</b>  Identify the levels of organization from cell to organism and describe how specific structures (parts), which underlie larger systems, enable the system to function as a whole.</p> <p><b>S.7.B.1.1.2</b>  Describe how specific structures in living things (from cell to organism) help them function effectively in specific ways (e.g. chlorophyll in plant cells-- photosynthesis;</p>

		<p>root hairs-- increased surface area; beak structures in birds-- food gathering; cacti spines-- protection from predators</p> <p><b>S.7.B.1.1.3</b> Explain how characteristic similarities and differences (from cell to organism) are used to identify and/or categorize organisms</p>
	<p><b>S.7.B.1.2</b> Compare methods of reproduction</p>	<p><b>S.7.B.1.2.1</b> Explain how cells arise from the division of a pre-existing cell.</p> <p><b>S.7.B.1.2.2</b> Compare various basic sexual and asexual reproductive processes (e.g. budding, cuttings)</p>
<p><b>S.7.B.2 Continuity of Life</b></p>	<p><b>S.7.B.2.1</b> Explain natural selection and its role in evolution</p>	<p><b>S.7.B.2.1.1</b> Explain how inherited traits (genes) and/or behaviors help organisms survive and reproduce in different environments</p> <p><b>S.7.B.2.1.2</b> Describe how natural selection is an underlying factor in a population's ability to adapt and change</p> <p><b>S.7.B.2.1.3</b> Explain that adaptations within species (physical, behavioral, physiological) are developed over long periods of time</p>

		<p><b>S8.B.2.1.5</b> Explain that adaptations are developed over long periods of time and are passed from one generation to another.</p>
	<p><b>S.7.B.2.2</b> Explain how a set of genetic instructions determines inherited traits of organisms</p>	<p><b>S.7.B.2.2.1</b> Identify and explain differences between inherited and acquired traits</p> <p><b>S.7.B.2.2.2</b> Recognize evidence that the gene is the basic unit of inheritance and explain the effect of dominant and recessive genes on inherited traits</p> <p><b>S.7.B.2.2.3</b> Explain how mutations can alter a gene and are a source of new variations in a population</p> <p><b>S.7.B.2.2.4</b> Describe how selective breeding or biotechnologies can change the genetic makeup of an organism (e.g. domesticated dogs, horses, cows; crops, hybrid plants; integrated pest management)</p> <p><b>S8.B.2.1.4</b> Describe how selective breeding or biotechnology can change the genetic makeup of organisms.</p>

<p><b>S.7.B.3 Ecological Behavior and Systems</b></p>	<p><b>S.7.B.3.1</b> Compare the biotic and abiotic factors of different ecosystems and explain relationships between these factors</p>	<p><b>S.7.B.3.1.1</b> Describe relationships (e.g. predator/prey competition, symbiosis) between organisms in different ecosystems.</p> <p><b>S8.B.3.1.3</b> Explain relationships among organisms (e.g., producers/consumers, predator/prey) in an ecosystem.</p> <p><b>S.7.B.3.1.2</b> Identify the major biomes (terrestrial and aquatic) and describe their characteristic biotic and abiotic factors</p>
	<p><b>S.7.B.3.2</b> Explain ways different variables may cause and or influence changes in natural and human-made systems</p>	<p><b>S.7.B.3.2.1</b> Identify and describe factors that cause and/or influence changes in populations (e.g. deforestation, disease, land use, natural disaster, invasive species)</p> <p><b>S.7.B.3.2.2</b> Explain how diversity affects the integrity of natural ecological systems</p> <p><b>S.7.B.3.2.3</b> Describe how human interactions with the environment impact an ecosystem (e.g. road construction, pollution, urban development, dam building/removal)</p>



		<p><b>S8.B.3.3.3</b> Describe how waste management affects the environment (e.g., recycling, composting, landfills, incineration, sewage treatment).</p> <p><b>S.7.B.3.2.4</b> Explain how changes in environmental conditions can affect the survival of a population and entire species (e.g. climate, hibernation, migration, and coloration)</p>
	<p><b>S.7.B.3.3</b> Explain how renewable and nonrenewable resources provide for human needs and how these needs impact the environment</p>	<p><b>S.7.B.3.3.1</b> Explain how renewable and/or nonrenewable resources provide for human needs (i.e., energy, food, water clothing and shelter).</p> <p><b>S.7.B.3.3.2</b> Explain how the use of renewable and/or nonrenewable resources affects the environment.</p>
<p><b>S.7.C.1 Structure, Properties, and Interaction of Matter and Energy</b></p>	<p><b>S.7.C.1.1</b> Describe the structure of matter and its chemical and physical properties.</p>	<p><b>S.7.C.1.1.1</b> Use characteristic physical or chemical properties of matter to distinguish one substance from another (e.g. density, freezing/melting points, solubility, ability to rust.) ****REMOVED***</p> <p><b>S.7.C.1.1.2</b> Recognize that the atom is the basic</p>

		<p>building block for all matter.</p> <p><b>S.7.C.1.1.3</b> Explain the differences between elements, compounds, and mixtures</p> <p><b>S.7.C.1.1.4</b> Describe the relationship between mass and volume as density.</p>
	<p><b>S.7.C.1.2</b> Compare chemical and physical changes in matter</p>	<p><b>S.7.C.1.2.1</b> Identify the reactants and products of simple chemical reactions (e.g. photosynthesis, cellular respiration)</p> <p><b>S.7.C.1.2.2</b> Compare the behavior of particle motion in solids, liquids and gasses.</p>
<p><b>S.7.C.2 Forms, Sources, Conversion, and Transfer of Energy</b></p>	<p><b>S.7.C.2.1</b> Describe how energy flows through the living world.</p>	<p><b>S.7.C.2.1.1</b> Describe how energy is obtained and used by organisms throughout their lives.</p> <p><b>S.7.C.2.1.2</b> Describe how energy is transferred and conserved in a closed system.</p> <p><b>S.7.C.2.1.3</b> Describe energy transformations within an ecosystem.</p>
<p><b>S.7.C.3 Principles of Motion and Force</b> *****REMOVED***** Transferred to 8th grade KUD</p>	<p><b>S.7.C.3.1</b> Explain the principles of force and motion</p>	<p><b>S.7.C.3.1.1</b> Describe how unbalanced forces acting on an object change its velocity.</p>

		<p><b>S.7.C.3.1.2</b> Describe forces acting on an object (e.g., friction, gravity, balanced versus unbalanced.)</p> <p><b>S.7.C.3.1.3</b> Explain the mechanical advantages of simple machines.</p>
<b>S.7.D.1 Earth Features and Processes that Change Earth and Its Resources</b>	<p><b>S.7.D.1.1</b> Describe Earth structures and processes that characterize different biomes on Earth</p>	<p><b>S.7.D.1.1.1</b> Identify and describe soil characteristics (i.e., particle size, porosity, and permeability) of different biomes</p> <p><b>S.7.D.1.1.2</b> Explain how fossils are formed and how they can provide evidence about plants and animals that once lived on Earth</p>
	<p><b>S.7.D.1.2</b> Describe characteristic features and significance of Earth's water systems</p>	<p><b>S.7.D.1.2.1</b> Compare the different water systems on Earth (e.g., wetland, watershed, ocean, river).</p> <p><b>S.7.D.1.2.2</b> Compare biotic and abiotic features of freshwater and saltwater systems.</p> <p><b>S.7.D.1.2.3</b> Describe the importance of water systems on the diversity and distribution of life on Earth</p>

<p><b>S.7.D.2 Weather, Climate, and Atmospheric Processes</b></p>	<p><b>S.7.D.2.1</b> Explain the basic elements of meteorology</p>	<p><b>S.7.D.2.1.1</b> Explain the effect of wind patterns, circulation of oceans currents, atmospheric pressure, and temperature on weather.</p> <p><b>S.7.D.2.1.2</b> Describe changes in atmospheric conditions associated with various weather patterns.</p>
<p><b>S.7.D.3 Composition and Structure of the Universe</b></p>	<p><b>S.7.D.3.1</b> Describe the essential ideas about the composition and structure of the universe and Earth’s place in it</p>	<p><b>S.7.D.3.1.1</b> Describe the patterns of Earth’s rotation and revolution in relation to the Sun and Moon (i.e., solar eclipse, lunar eclipse, phases of the Moon, and time).</p> <p><b>S.7.D.3.1.2</b> Explain how gravity is the essential force in determining the motions of the planets and other objects in the solar system. ***REMOVED***</p> <p><b>S.7.D.3.1.3</b> Compare the properties and conditions of objects in the solar system to those of Earth ****REMOVED*****</p> <p><b>S.7.D.3.1.4</b> Identify and describe instruments that are used to study the universe (e.g., telescope, probes, satellites, space observatories). <i>Intro Only</i></p>



## Life Science Grade 7 Pacing Guide

Course: 7th Grade Life Science	
<b>Course Unit (Topic)</b>	<b>Length of Instruction (Class Periods)</b>
Introduction	10 Days
Ecology and Energy Systems	40 Days
Biomes including climate, weather, and soil.	20 Days
Resources and Human Impacts	14 Days
Cells and Chemical Processes	30 Days
Genetics, Heredity and Reproduction	30 Days
Natural Selection and Geologic Time and Fossils	13 Days
Classification	11 Days
SI Benchmark	6 days
PSSA	6 days
<b>TOTAL DAYS</b>	<b>180</b>