



## 7<sup>th</sup> grade Life Science

1. This course focuses on building a strong foundation for high school life science fields like biology, anatomy/physiology, environmental science, etc.
2. I also use daily graphs and data that students have to interpret and infer to help develop analysis skills and support the math course of study.
3. For all experiments performed students have a short lab report that they are expected to complete.
4. For demonstration of mastery understanding of standards often students have in class projects they complete and **if they are running out of time can and should do as homework.**
5. The life science standards are broken up into units based on resources received from the state's AMSTI sites and the A+ curriculum that I use to teach and perform experiments with.
6. The main units are: historic records, Microbiology and Molecules, Cell process and structures, Heredity, Human body, and Ecosystems and Diversity.
7. Timeline of instruction will be based on order and delivery of AMSTI kits.

Timeline	Unit/theme	Standard	Student Focused Objective	Resources/ Suggested Activities
	All topics will draw from the listed resources *Note that math and science will			AMSTI resources for 7 <sup>th</sup> grade Science: <a href="https://www.amsti.org/science">https://www.amsti.org/science</a>  Cladogram NOVA virtual lab: <a href="https://www.pbs.org/wgbh/nova/labs/lab/evolution/">https://www.pbs.org/wgbh/nova/labs/lab/evolution/</a>  A+ College Readiness resource

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	<p>be integrated so resources may crossover in topic areas</p>			<p><a href="https://aplusala.org/college-ready/">https://aplusala.org/college-ready/</a>          Arizona State March Mammal Madness  <a href="https://libguides.asu.edu/marchmammalmadness">https://libguides.asu.edu/marchmammalmadness</a></p> <p>Letters to a Pre-scientist:  <a href="https://prescientist.org/for-teachers/">https://prescientist.org/for-teachers/</a></p> <p>Albatross Bolus Education Program:  <a href="https://www.fws.gov/education-programs/albatross-bolus-education-program">https://www.fws.gov/education-programs/albatross-bolus-education-program</a></p>
		<p>7S.1 Develop and use a model to explain the functions of specific cell structures necessary for maintaining a stable environment, including the cell membrane, cell wall, chloroplasts, endoplasmic reticulum, golgi apparatus, mitochondria, nucleus, ribosomes, and vacuoles.</p> <p>a. Engage in argument from evidence to support claims of cell theory.</p>	<p>Students will make a model to demonstrate what each part of a cell does</p> <p>Students explain how cell theory works.</p>	

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		<p>b. Construct an explanation of how prokaryotic and eukaryotic cells differ in structure and function.</p> <p>c. Plan and carry out an investigation to identify and explain features of a cell's semi-permeable membrane which enable it to control what enters and exits the cell</p>	<p>Students explain how animal/plant cells are different from bacteria cells.</p> <p>Students will do experiments to model how cell membranes work.</p>	
		<p>7S.2 Construct an explanation of how photosynthesis and cellular respiration cycle matter and establish the flow of energy into and out of an organism.</p> <p>a. Ask questions and construct an explanation of how anaerobic bacteria produce energy in environments with no oxygen.</p>	<p>Students will explain the reasons &amp; process of photosynthesis and cellular respiration.</p> <p>Students will explain how bacteria live when not enough oxygen for other cells to survive.</p>	
		<p>7S.3 Construct an explanation of how the process of mitosis maintains complex</p>	<p>Explain the process of Mitosis in the life cycle of a cell to make more cells heal and for an organism to grow and develop.</p>	

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		<p>organisms and ensures new cells with identical genetic information.</p> <p>a. Ask questions and communicate information regarding how errors in mitosis may affect cell division.</p>	<p>Explain the difference of normal cell vs. cancer cells.</p>	
		<p>7S.4 Obtain, evaluate, and communicate information explaining how cells, tissues, and organs of various systems of the human body work together for specific functions, including the circulatory, digestive, muscular, nervous, respiratory, and skeletal systems.</p>	<p>Students explain how different organ systems work for the human body to survive.</p>	
		<p>7S.5 Construct an explanation of how the cycling of matter between abiotic and biotic parts of ecosystems demonstrates the flow of energy and the conservation of matter, including the carbon, nitrogen, and water cycles</p>	<p>Students explain how dead things break down and become nutrients for other living things.</p>	

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		7S.6 Analyze and interpret data to predict how environmental conditions, genetic factors, and resource availability will impact the growth of individual organisms and populations of organisms in an ecosystem.	Students will explain how conditions around an organism can increase/decrease their population.	
		7S.7 Analyze and interpret data to explain how density-independent and density-dependent limiting factors in an ecosystem can lead to shifts in populations.	Students explain how fires, floods, invasive species, etc. can change population patterns.	
		7S.8 Construct an explanation that predicts patterns of interactions between and among organisms in different ecosystems.	Students can create and explain food chains and food webs.	
		7S.9 Design a solution to maintain biodiversity and ecosystem services in a given scenario.	Students can create a solution to a natural resource problem (droughts, food shortages, etc.) that people face in the world.	
		7S.10 Obtain, evaluate, and communicate information about	Students can explain why certain plants and animals are more likely to have offspring than others of their own species or how 1 species is more successful at	

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		characteristic animal behaviors and specialized plant structures and their effect on the probability of successful reproduction.	reproducing than another in an area.	
		7S.11 Develop and use models to demonstrate how genetic variations between parents and offspring result from differences in inherited genes located on chromosomes.	Students will use Punnett squares to determine genetic traits of offsprings	
		7S.12 Develop and use models to explain how genes are expressed through the flow of genetic information from DNA to RNA to a functional protein	Students explain how cells create protein molecules	
		7S.13 Develop and use models to explain that meiosis results in new genetic combinations with increased variation.  a. Construct an explanation of the advantages and disadvantages of asexual	Students explain how meiosis creates genetically different offspring.  Students can say the pros and cons of asexual reproduction	

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		and sexual reproduction. b. Construct an explanation from evidence of how genetic variants may result in harmful, beneficial, or neutral effects on the structure and function of an organism.	Students can explain why a mutation could be good, bad, or neutral for a species.	
		7S.14 Obtain, evaluate, and communicate information on the use of technologies that impact the inheritance and appearance of traits in organisms	Students can discuss the pros and cons of computer printers like CRISPER, gene therapy, genetic modifications, genetic engineering, etc.	
		7S.15 Analyze and interpret data from examination of fossils, relict species, and modern organisms to determine patterns of change in anatomical structures over time.	Students can create and read a Cladogram.	
		7S.16 Obtain, evaluate, and communicate evidence comparing patterns in the embryological development of multiple	Students can determine order of a living thing's growth development from embryo to birth.	

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		species to identify relationships not evident in the fully formed adult anatomy.		
		7S.17 Ask questions to clarify how natural selection over generations may lead to changes in the frequency of specific traits to enhance survival and reproduction of a population.	Students can ask and answer questions on how species change over time to match their environment and become new ones.	