

Pacing Guide for Life Science 2019-2020

* This is a general guide to the year, dates are not exact. Changes and additions may be added as the year continues. (So far only until December, will be updated to see where we are by Jan.)

* Vocabulary for each section is from this website: [VDOE--click on Life Science Tab](#) then open each ESS for separate SOL's

Weeks/Dates	SOL/Unit	Vocabulary/concepts
Weeks 1-2 Aug. 7-17	<ul style="list-style-type: none"> ● Intro to Science/Pre-test ● LS.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations-- reviewing measurement and scientific tools 	Metric system and units, triple beam balance, volume, length, liquid and solid volume, parts of a microscope, lab safety
Weeks 3-4 Aug. 20-31	<ul style="list-style-type: none"> ● Characteristics of Living Things/Cell Structure and Theory ● LS.2 The student will investigate and understand that all living things are composed of cells <ul style="list-style-type: none"> ○ cell structure and organelles ○ similarities and differences between plant and animal cells; ○ development of cell theory; and ○ cell division 	cell membrane, cell wall, chloroplast, cytoplasm, endoplasmic reticulum, eukaryotic cell, microscope, microscopic, mitochondrion, nucleus, theory, vacuole
Weeks 5-6 Sep. 3-14	<ul style="list-style-type: none"> ● Cell Structure and Theory ● LS. 2 continued 	anaphase, cell, chromosomes, cytokinesis, cytoplasm, interphase, meiosis, metaphase, mitosis, nucleus, organelles, prophase, replication, telophase
Weeks 7-8 Sep. 17-28	<ul style="list-style-type: none"> ● Cell Organization and Systems ● LS. 3 The student will investigate and understand that living things show patterns of cellular organization <ul style="list-style-type: none"> ○ cells, tissues, organs, and systems; and ○ patterns of cellular organization and their relationship to life processes in living things. 	arrangement, cell, cellular organization, complex, function, multicellular, organ, organ system, organism, process, relationships, specialized, stable, tissue, unicellular
Weeks 9-10	<ul style="list-style-type: none"> ● Classification of Organisms 	angiosperm, annelids,

Oct.1 -12	<ul style="list-style-type: none"> ● LS.4 The student will investigate and understand how organisms can be <ul style="list-style-type: none"> ○ the distinguishing characteristics of domains of organisms; ○ the distinguishing characteristics of kingdoms of organisms; ○ the distinguishing characteristics of major animal phyla and plant divisions; and ○ the characteristics that define a species. classified. 	arthropods, chordates, classification, cnidarians, conifer, echinoderms, Eukarya, gymnosperm, invertebrate, mollusks, nonvascular, phyla, phylum, species, vascular, vertebrate --classification: domain, kingdom, phylum, class, order, genus, species
Weeks 11-12 Oct.15-26	<ul style="list-style-type: none"> ● LS.4 continued (Classification) ● Photosynthesis and Cellular Respiration ● LS.5 The student will investigate and understand the basic physical and chemical processes of photosynthesis and its importance to plant and animal life <ul style="list-style-type: none"> ○ energy transfer between sunlight and chlorophyll; ○ transformation of water and carbon dioxide into sugar and oxygen; and ○ photosynthesis as the foundation of virtually all food webs. 	binomial nomenclature, decomposer, eukaryotic, hyphae, kingdoms, multicellular, parasite, photosynthesis, prokaryotic, unicellular
Weeks 13-14 Oct. 29- Nov. 9	<ul style="list-style-type: none"> ● LS.5 continued ● Cycles in Nature and Energy Flow ● LS.6 The student will investigate and understand that organisms within an ecosystem are dependent on one another and on nonliving components of the environment. <ul style="list-style-type: none"> ○ the carbon, water, and nitrogen cycles; ○ interactions resulting in a flow of energy and matter throughout the system; ○ complex relationships within terrestrial, freshwater, and marine ecosystems; and ○ energy flow in food webs and energy pyramids. 	(see above for LS.5) photosynthesis, carbon, combustion, condensation, cycle, decomposition, elements, evaporation, groundwater, nitrogen, photosynthesis, precipitation, recycle, respiration, water
Weeks 15-16 Nov. 12-20	<ul style="list-style-type: none"> ● LS.6 continued 	(see above for LS.6)
Weeks 17-18	<ul style="list-style-type: none"> ● LS. 6 continued (behind earlier 	

Nov. 26- Dec. 7	schedule--adjusted on 12/23/18	
Weeks 19-20 Dec. 10-19	<ul style="list-style-type: none"> LS. 6 continued. We finished the carbon cycle and nitrogen cycle with review of the water cycle. 	
2019		
Weeks 21-22 Jan. 4-11	<ul style="list-style-type: none"> finish LS. 6 <ul style="list-style-type: none"> interactions resulting in a flow of energy and matter throughout the system; complex relationships within terrestrial, freshwater, and marine ecosystems; and energy flow in food webs and energy pyramids. 	interdependence, trophic levels, food webs, food pyramids, producer, consumer, decomposer, herbivore, omnivore, carnivore, niche.
Weeks 23-24 Jan. 14-25	<p>LS. 7 The student will investigate and understand that interactions exist among members of a population. Key concepts include</p> <ol style="list-style-type: none"> competition, cooperation, social hierarchy, territorial imperative; and influence of behavior on a population <p>LS.8 The student will investigate and understand interactions among populations in a biological community. Key concepts include</p> <ol style="list-style-type: none"> the relationships among producers, consumers, and decomposers in food webs; the relationship between predators and prey; competition and cooperation; symbiotic relationships; and niches. 	environment, habitat, niche, population, predator, prey, relationship, competition, cooperation, parasitism, commensalism, and mutualism
Weeks 25-26 Jan. 28- Feb. 8	<p>LS.8 continued</p> <p>LS.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors in an ecosystem. Key concepts include</p> <ol style="list-style-type: none"> differences between ecosystems and biomes; characteristics of land, marine, and freshwater ecosystems; and adaptations that enable organisms to survive 	

	within a specific ecosystem.	
Weeks 27-28 Feb. 11-22	LS.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment. Key concepts include a) phototropism, hibernation, and dormancy; b) factors that increase or decrease population size; and c) eutrophication, climate changes, and catastrophic disturbance	
Weeks 29-30 Feb. 25 - Mar. 8	LS 10 continued if needed LS.11 The student will investigate and understand the relationships between ecosystem dynamics and human activity. Key concepts include a) food production and harvest; b) change in habitat size, quality, or structure; c) change in species competition; d) population disturbances and factors that threaten or enhance species survival; and e) environmental issues.	
Weeks 31-32 Mar. 11-22	LS.12 The student will investigate and understand that organisms reproduce and transmit genetic information to new generations. Key concepts include a) the structure and role of DNA; b) the function of genes and chromosomes; c) genotypes and phenotypes; d) characteristics that can and cannot be inherited; e) genetic engineering and its applications; and f) historical contributions and significance of discoveries related to genetics.	
Weeks 33-24 Apr.1-12	LS.12 continued	
Weeks 35-36	LS.13 The student will investigate and understand that populations of organisms	

<p>Apr. 15-26</p>	<p>change over time. Key concepts include a) the relationships of mutation, adaptation, natural selection, and extinction; b) evidence of evolution of different species in the fossil record; and c) how environmental influences, as well as genetic variation, can lead to diversity of organisms.</p>	
<p>Weeks 37-38 Apr. 29- May 10</p>	<p>LS.13 The student will investigate and understand that populations of organisms change over time. Key concepts include a) the relationships of mutation, adaptation, natural selection, and extinction; b) evidence of evolution of different species in the fossil record; and c) how environmental influences, as well as genetic variation, can lead to diversity of organisms.</p>	
<p>Weeks 39-40 May 13-21</p>	<p>Comprehensive lab practical, year end review and testing</p>	