

Instructor: Melissa Ewen, Gary Miles, Candida Braun, Jenny Fulton

Course/Area: Biology

Grade: 10

Content/Topics	Standard	Skills/Benchmarks	Assessment/Products	Time
IV. Life Science	A. Cells The student will comprehend that all living things are composed of cells, and that the life processes in a cell are based on molecular interactions.	1. The student will relate cellular structures to their functions.	lectures, PowerPoint, video, microscope labs, cell lab, worksheet, cell brochure, projects, quizzes, tests, diagrams	2-3 weeks
		2. The student will compare and contrast the structures found in typical plant, animal, and bacterial cells.		
		3. The student will explain the role of the cell membrane as a highly selective barrier in diffusion, osmosis and active transport.	lecture, notes, building molecules, enzyme lab (specificity), temperature effects on enzymes, quizzes, test, lab	1 day
		4. The student will describe the role of enzymes as catalysts in metabolism and cellular synthesis of new molecules.		
5. The student will differentiate between the processes of photosynthesis and respiration in terms of energy flow, reactants and products.	model, book, lecture, lab, quiz, test, video, essay tests	2-3 weeks		
6. The student will describe and compare the processes of mitosis and meiosis and their roles in the cell cycle.	activities, video, labs, diagrams, rebob lab, lecture, viewing slides, modeling	2 weeks		
IV. Life Science	B. Diversity of Organisms The student will classify, compare and contrast the diversity of organisms on Earth and their modes of accommodating the requirements for life.	1. The student will relate the structure, complexity and organization of organ systems to the methods of obtaining, transforming, releasing and eliminating the matter and energy used to sustain the organism.	labs, student-led instruction, videos, paramecium, hydra, planaria, wolves on web, quiz, lecture, test	2 weeks

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IV. Life Science	<p>B. Diversity of Organisms The student will classify, compare and contrast the diversity of organisms on Earth and their modes of accommodating the requirements for life. (continued)</p>	<p>2. The student will recognize that organisms have both innate and learned behavioral responses to internal and external stimuli, including the tropic responses in plants.</p> <p>3. The student will use scientific evidence, including the fossil record, homologous structures, embryological development or biochemical similarities, to classify organisms in order to show probable evolutionary relationships and common ancestry.</p>	<p>labs, student-led instruction, videos, paramecium, hydra, planaria, wolves on web, quiz, lecture, test (continued from above)</p> <p>geological time scale, walk thru time, natural selection/evolution, labs, lectures, worksheets, quiz, videos, test</p>	<p>(cont. from above)</p> <p>1-2 weeks</p>
IV. Life Science	<p>C. Interdependence of Life The student will describe how the environment and interactions between organisms can affect the number of species and the diversity of species in an ecosystem.</p>	<p>1. The student will describe the factors related to matter and energy in an ecosystem that both influence fluctuations in population size and determine the carrying capacity of a population.</p> <p>4. The student will predict and analyze how a change in an ecosystem, resulting from natural causes, changes in climate, human activity or introduction of invasive species, can affect both the number of organisms in a population and the biodiversity of species in the ecosystem.</p>	<p>River Watch, carrying capacity: owls/ mice, wolves on web, deer/wolf, peppered moth activity, water on the web</p>	<p>2 weeks</p>

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IV. Life Science	C. Interdependence of Life The student will describe how the environment and interactions between organisms can affect the number of species and the diversity of species in an ecosystem.	2. The student will explain how adaptations of species and co-evolution with other species are related to success in an ecosystem. 3. The student will identify examples of mutualism, commensalism, and parasitism in a stable ecosystem.	lecture, reading, worksheets, video, succession, quiz hosts, parasites, lecture, lab, quiz	1-2 days 1-3 days
IV. Life Science	D. Heredity The student will explain how inherited characteristics are encoded by genes.	1. The student will explain that the instructions for the characteristics of all organisms are carried in nucleic acids. 2. The student will define the relationship between DNA, genes and chromosomes. 3. The student will describe the structure and function of DNA and distinguish between replication, transcription and translation. 4. The student will know that different species of multicellular organisms have a characteristic number of chromosomes, and that in typical humans there are 22 autosomal pairs and two sex chromosomes. 5. The student will describe how genetic information is transmitted from parents to offspring through the processes of meiosis and fertilization as they relate to chromosome recombination and sexual reproduction.	project, video (Race for D.H.), labs, model, research project, punnett squares, pedigrees, DNA extraction, rebob models	4+ weeks

