

Curriculum Map - AP Biology

Month	Content	Skills	Assessment
September	<ul style="list-style-type: none"> • Biochemistry <ul style="list-style-type: none"> - Basic Chemistry - Properties of water - Versatility of carbon - Types of organic molecules • Cells <ul style="list-style-type: none"> - Prokaryotic versus eukaryotic 	<ul style="list-style-type: none"> • Recognize examples of various types of organic molecules. • Construct basic organic molecules using molecular kits. • Describe the properties of water and carbon that make them essential for living things. • Compare various types of cells. • Identify cell parts under the microscope. 	<ul style="list-style-type: none"> • lab: enzyme catalysis - What changes rate of enzyme action? • exam: multiple choice & essay • quizzes - lock & key model, water, major classes biochemistry • lab: proteases • lab: paperase - when [] charges rate changes • lab: osmosis & diffusion • exam: multiple choice & essay • lab: plastids
October	<ul style="list-style-type: none"> • Cell Structure and Function • Cell Transport and Permeability • Molecular Genetics <ul style="list-style-type: none"> - Nucleic acid structure - DNA replication - Protein synthesis - Mutation - Control of gene expression - Molecular genetic technology 	<ul style="list-style-type: none"> • Differentiate between types of transport. • Show the effects of solute concentration on cell membranes. • Determine what types of molecules pass through a cell membrane passively. • Define and diagram DNA structure. • Relate gene position and structure to that of the chromosome. • Identify sources of genetic change. • Run and summarize a DNA fingerprint. • Transform a gene for ampicillin resistance to an e.coli bacteria. 	<ul style="list-style-type: none"> • quizzes - cell organelles, structure & function recognition • cell CD - cell organelles, structure & function recognition • Video History Channel - accomplishments in molecular genetics • lab: gel electrophoresis • lab: gene transformation • test: multiple choice/essay • article/summary on genetic technology - Understand processes & results of new role genetics techniques. • quizzes • activity: protein synthesis • Genetic Update Conference • activity: paper - DNA fingerprinting

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November	<ul style="list-style-type: none"> • Classical Genetics <ul style="list-style-type: none"> - mendelian inheritance - probability - sex determination - chromosomal abnormalities and defect - linkage - epistasis - polygenic inheritance - multiple alleles • Evolution <ul style="list-style-type: none"> - evidence of evolution - Darwin -"natural selection" - selection forces 	<ul style="list-style-type: none"> • Construct punnet squares to solve genetic problems. • Complete a genetic survey. • Interpret how various factors influence gene frequencies. • Collect evidence that evolution has and is occurring. • Restate the parts of Darwin's theory of natural selection. 	<ul style="list-style-type: none"> • lab: allele frequencies • work sheets - genetic problem solving • quizzes • test: Multiple choice/essay • Be able to solve single trait crosses, 2 traits unlinked, 2 traits linked, blood type, codominant, & sex linked problems. • lab: evidence for evolution • CR butterfly activity • test: multiple choice/essay • research report on <ul style="list-style-type: none"> - origin of life - oral presentation -
December	<ul style="list-style-type: none"> • Changes in allele frequency • Speciation • Origin of life • Classification <ul style="list-style-type: none"> - criteria for classification • 5 Kingdom Survey (structure & examples) <ul style="list-style-type: none"> - monera - protist - fungus - plant - animal 	<ul style="list-style-type: none"> • Propose a theory as to the true origin of life. • Interpret how various forces influence evolution. • Identify criteria used to classify organisms. • Compare & contrast examples & characteristics of representatives from the various kingdoms. • Handle & generate observations of preserved specimens. 	<ul style="list-style-type: none"> • Quizzes • lab: animal survey - where each group is assigned a kingdom & are expected to create & present a power point presentation of that kingdom to the class • test: multiple choice/essay • quizzes • practical: animal classification

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January	<ul style="list-style-type: none"> • Photosynthesis and Respiration <ul style="list-style-type: none"> - aerobic respiration - fermentation - mitochondrial structure - photosynthesis - chloroplast structure - alternate pathways • Plants <ul style="list-style-type: none"> - plant reproduction strategies - adaptations to seasonal change - plant structure - transport of materials - regulation & behavior 	<ul style="list-style-type: none"> • Reconstruct the reactions for respirations and photosynthesis. • Separate the pigments of a photosynthetic plant. • Use a spirometer to determine lung capacity. • Compare varying frequencies and wave lengths of light on photosynthesis. • Determine which factors contribute most directly to transportation rate. • Recognize the various strategies plants use in adapting to seasonal change and seed dispersal. • Identify the reasons plants experience tropisms. 	<ul style="list-style-type: none"> • Lab: photosynthetic pigment separation • Quizzes • Exam: multiple choice/essay • Be able to use the photospectrometer 20 to show varying rates of photosynthesis in spinach leaves. • Lab: plant transpiration • Quizzes • Exam: multiple choice/essay • Practical
February	<ul style="list-style-type: none"> • Human Physiology Locomotion <ul style="list-style-type: none"> - muscle types - muscle - bone interactions - muscle contraction & structure - connective tissues - skeletons - types of bones - bone structure & function - bone growth & repair 	<ul style="list-style-type: none"> • Determine the various types of muscles & compares their structure. • Trace the steps in a muscle contraction. • Identify locations & jobs of various types of connective tissues. • Correlate bone structure to function. • Explain the process of bone formation. 	<ul style="list-style-type: none"> • Lab: pig dissection • Exams: multiple choice/essay • Lab: physiology of circulatory system • Quizzes • Computer generated nutrition analysis • Be able to recognize similarities & differences between human anatomy & that of the pig. Locate all organs of the digestive, excretory, respiratory, endocrine, & circulatory systems. • Lab: earthworm circulation • Practical: fetal pig systems

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February (continued)	<ul style="list-style-type: none"> • Digestion <ul style="list-style-type: none"> - nutrition - gastrointestinal tract - digestive enzymes - hormonal control • Respiration <ul style="list-style-type: none"> - exchange surfaces - human gas exchange 	<ul style="list-style-type: none"> • Record food consumption for five days, transfers the information on to a computer program, analyzes the results, and suggests ways to improve their diet. 	<p>(See above, same topic.)</p> <ul style="list-style-type: none"> • To be able to analyze the individuals diet & make suggestions as to how that diet can be improved.
March	<ul style="list-style-type: none"> • Transport <ul style="list-style-type: none"> - functions of circulatory system - types of circulatory systems - blood & immunity • Excretion <ul style="list-style-type: none"> - various mechanisms - human excretion • Nervous Control <ul style="list-style-type: none"> - the neuron - types of neurons - transmission of impulses - the brain & the spinal cord - sensory organs • Endocrine Responses <ul style="list-style-type: none"> - hormones & glands - negative feedback 	<ul style="list-style-type: none"> • Observe how their bodies' pulse & breathing rates respond to various factors & infers why. • Trace the path of blood throughout the human body. • Associate blood with immunity & can outline a typical immune response. • Differentiate between areas of the brain & explains what parts control what functions. • Relate hormone, gland, & their functions. 	<p>(See above, same topic.)</p> <ul style="list-style-type: none"> • To measure their circulatory fitness based on changes in the body's pulse rate to various stimuli.

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April	<ul style="list-style-type: none"> • Reproduction <ul style="list-style-type: none"> - human female - human male - gametogenesis - menstrual cycle - fertilization • Development <ul style="list-style-type: none"> - cleavage - differentiation - internal vs. external - birth • Animal behavior <ul style="list-style-type: none"> - types of animal behavior - animal taxis - communication - foraging - social behavior 	<ul style="list-style-type: none"> • Contrast & relate structure of human male & female. • Outline the process of differentiation. • Compare internal development to external development. • Explain the various type of animal taxis & relates them to structure & function. • Describe advantages of different types of foraging strategies. 	<ul style="list-style-type: none"> • video & write-up on: "Miracle of Life" • To see the stages of mitosis under the microscope & to be able to estimate the frame of each stage based on the percentage of cells in that stage in relation to other stages. • test: multiple choice/essay • lab: animal behavior • quizzes • To be able to observe various behaviors of pill bugs & how they respond to different external stimuli.
May	<ul style="list-style-type: none"> • Review 	<ul style="list-style-type: none"> • Students will review all material covered throughout the year by doing assignments & taking daily quizzes. 	<ul style="list-style-type: none"> • Review quizzes. • Review book assignments. • AP exam
June	<ul style="list-style-type: none"> • Final project <p>Revised 8/03</p>	<ul style="list-style-type: none"> • Students will select a topic in the area of biological science, research the topic, & prepare a report containing written, oral, & visual data on their topic. 	<ul style="list-style-type: none"> • To show the finished product of many years of high school science by demonstrating they can invent, run, & explain a biological problem/ question using the knowledge obtained through the many curricula they have incurred here at S-E H.S.