

VAN BUREN SCHOOL DISTRICT
Pre AP Honors BIOLOGY CURRICULUM

DA YS	CHAR	TOPIC	SUB-TOPICS	LABS	Framework	...
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DA YS	CHAR	TOPIC	SUB-TOPICS	LABS	Framework	...
7	1	The Nature of Science & Laboratory Equipment/ Safety	Biology, Scientific method, model, critical thinking, observation hypothesis, theory, experiment, control, independent and dependent variable. Standards, SI units, meter, volume, units, liter, mass, quantitative and qualitative measurements, graphs, charts and error analysis. Dimensional Analysis	Measurement Scientific Method Lab SI Measurement Lab Paper towel Lab Bubble Lab Observation Lab Analyzing Experimental Design How Does Acid Rain Effect Seed Growth	<p>MC.2.B.11 Discuss homeostasis using thermoregulation as an example</p> <p>NS.10.B.1 Explain why science is limited to natural explanations of how the world works</p> <p>NS.10.B.2 Compare and contrast hypotheses, theories, and laws</p> <p>NS.10.B.3 Distinguish between a scientific theory and the term "theory" used in general conversation</p> <p>NS.10.B.4 Summarize the guidelines of science:</p> <ul style="list-style-type: none"> ▪ explanations are based on observations, evidence, and testing ▪ hypotheses must be testable ▪ understandings and/or conclusions may change with additional empirical data <p>scientific knowledge must have peer review and verification before acceptance</p> <p>NS.11.B.1 Develop and explain the appropriate procedure, controls, and variables (dependent and independent) in scientific experimentation</p> <p>NS.11.B.2 Research and apply appropriate safety precautions (refer to ADE Guidelines) when designing and/or conducting scientific investigations</p> <p>NS.11.B.3 Identify sources of bias that could affect experimental outcome</p> <p>NS.11.B.4 Gather and analyze data using appropriate summary statistics</p> <p>NS.11.B.5 Formulate valid conclusions without bias</p> <p>NS.11.B.6 Communicate experimental results using appropriate reports, figures, and tables</p> <p>NS.12.B.1 Recognize that theories are scientific explanations that require empirical data, verification, and peer review</p> <p>NS.12.B.2 Understand that scientific theories may be modified or expanded based on additional empirical data, verification, and peer review</p> <p>NS.14.B.1 Compare and contrast biological concepts in pure science and applied science</p> <p>NS.14.B.2 Discuss why scientists should work within ethical parameters</p> <p>NS.14.B.2 Discuss why scientists should work within ethical parameters</p>	<p>Formatted: Font: 8 pt</p> <p>Formatted Table</p> <p>Deleted: TER</p> <p>Formatted: Bullets and Numbering</p> <p>Deleted: P</p> <p>Deleted: ¶</p> <p>Deleted: s¶</p> <p>Deleted: The Nature of Science See Benchmark Overview¶ (Inquiry) Describe the nature of science¶ ¶ (5.06) Describe the connections between pure and applied science as they relate to everyday life.¶ ¶ (5.01) Describe the roles of biology in everyday life.¶ ¶ (5.02) Describe various life science careers and the training needed for the selected career¶ ¶ (Inquiry) The scientific method per Benchmark Goals¶ (Inquiry)¶ (Inquiry) Note the differences between observations, hypothesis, and laws.</p>

DA YS	CHAR	TOPIC	SUB-TOPICS	LABS	Framework
4	2	Chemistry	Elements, atoms, formula, equations, reactions, isotopes, compounds, bonding, mixtures, solutions, polarity, chemical reactions, biomolecules, enzymes, hydrolysis, dehydration synthesis. Hydrophobic and hydrophilic, cell membrane	PH lab Make structural formulas with Bird Seed *Test for Organic compounds *Test for Variables that affect Enzymes *Adhesion/cohesion Lab	MC.1.B.1 Describe the structure and function of the major organic molecules found in living systems: <ul style="list-style-type: none"> carbohydrates proteins enzymes lipids nucleic acids MC.1.B.2 Describe the relationship between an enzyme and its substrate molecule. MC.1.B.3 Investigate the properties and importance of water and its significance for life: <ul style="list-style-type: none"> surface tension adhesion cohesion polarity pH MC.1.B.4 Explain the role of energy in chemical reactions of living systems: <ul style="list-style-type: none"> activation energy exergonic reactions endergonic reactions
1	3	Microscope	Care, parts, safety, magnifications, resolution, use, field of view, staining, wet mounts, slides. Field of View Measurements	Microscope Introduction Lab	
3	3	Cell Structure	Organelles, cell theory, prokaryotic, eukaryotic. Cell Size, limitation of cell size	Cell Script, group cell, plant and animal cell lab Cell Flash Cards, Volume versus Surface Area Ratio Manipulative View Microscopic Cells Plant and Animal Lab	MC.2.B.2 Compare and contrast prokaryotes and MC.2.B.1 Construct a hierarchy of life from cells to ecosystems eukaryotes MC.2.B.3 Describe the role of sub-cellular structures in the life of a cell: <ul style="list-style-type: none"> organelles ribosomes MC.2.B.4 Relate the function of the plasma (cell) membrane to its structure cytoskeleton MC.2.B.5 Compare and contrast the structures of an animal cell to a plant cell MC.2.B.6 Compare and contrast the functions of autotrophs and heterotrophs NS.12.B.4 Relate the development of the cell theory to current trends in cellular biology MC.2.B.7 Compare and contrast active transport and passive transport mechanisms: <ul style="list-style-type: none"> diffusion osmosis endocytosis exocytosis phagocytosis pinocytosis
5	4	Cell membrane, Diffusion, Osmosis,	Plasma membrane, structure, permeability, brownian motion, diffusion, osmosis, tonicity, plasmolysis, crenation, active and passive transport, bulk transport. Turgid, Flacid, (isotonic), facilitated diffusion	Plasmolysis Egg demonstration Plastic Cube Cell Size Manipulative Starch Iodine Lab *Osmosis Lab *Diffusion Lab	

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(1.03) Compare and contrast the structure and function of prokaryotic and eukaryotic cells.¶

((3.03) Homeostasis

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(3.03) Homeostasis

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4	5	Photosynthesis & Respiration	Light reactions and dark reactions, alcohol fermentation, lactic acid, complete cell respiration, phosphorylation	Fermentation lab Sour Dough Bread Photosynthesis Interactive Exploration <u>*Photosynthesis/Fermentation Lab</u> <u>Chromatography Lab</u> <u>Photosynthesis Lab</u>	<p><u>MC.3.B.1 Compare and contrast the structure and function of <i>mitochondria</i> and <i>chloroplasts</i>.</u></p> <p><u>MC.3.B.2 Describe and model the conversion of stored energy in organic molecules into usable cellular energy (ATP):</u></p> <ul style="list-style-type: none"> ▪ <u><i>glycolysis</i></u> ▪ <u><i>citric acid cycle</i></u> ▪ <u><i>electron</i></u> <p><u>MC.3.B.3 Compare and contrast <i>aerobic</i> and <i>anaerobic</i> respiration:</u></p> <ul style="list-style-type: none"> ▪ <u><i>lactic acid fermentation</i></u> ▪ <u><i>alcoholic fermentation</i></u> <p><u>MC.3.B.4 Describe and model the conversion of light energy to chemical energy by photosynthetic organisms:</u></p> <ul style="list-style-type: none"> ▪ <u><i>light dependent</i> reactions</u> ▪ <u><i>light independent</i> reactions</u> ▪ <u><i>transport chain</i></u> <p><u>MC.3.B.5 Compare and contrast <i>cellular respiration</i> and <i>photosynthesis</i> as energy conversion pathways</u></p>
3	6	Cell Reproduction, Mitosis, Cell Size	Reason for cell division, chromosomal change, uncontrolled cell division. Cell Cycle, diploid, haploid, homologous chromosomes	Volume versus Surface Area Ratio Mitosis Lab- pipe cleaners	<p><u>MC.2.B.8 Describe the main events in the <i>cell cycle</i>, including the differences in plant and animal cell division:</u></p> <ul style="list-style-type: none"> ▪ <u><i>interphase</i></u> ▪ <u><i>mitosis</i></u> ▪ <u><i>cytokinesis</i></u> <p><u>MC.2.B.9 List in order and describe the stages of <i>mitosis</i>:</u></p> <ul style="list-style-type: none"> ▪ <u><i>prophase</i></u> ▪ <u><i>metaphase</i></u> ▪ <u><i>anaphase</i></u> ▪ <u><i>telophase</i></u>.
2	7	Meiosis	Oogenesis and spermatogenesis, diploid, haploid, homologous chromosomes, phases, crossing over, genetic recombination. Diploid, haploid, and alternation of generations life cycles	<u>Meiosis Lab</u>	<p><u>MC.2.B.10 Analyze the meiotic maintenance of a constant <i>chromosome</i> number from one generation to the next</u></p> <p><u>CDL.7.B.8 Compare and contrast life cycles of familiar organisms</u></p> <ul style="list-style-type: none"> ▪ <u><i>sexual reproduction</i></u> ▪ <u><i>asexual reproduction</i></u> ▪ <u><i>metamorphosis</i></u> ▪ <u><i>alternation of generations</i></u>

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DA YS	CHAP	TOPIC	SUB-TOPICS	LABS	Framework	
4	8	Mendel and Genetics	Mendels work, dominant and recessive, homozygous and heterozygous, phenotype and genotype Punnett squares, monohybrid and dihybrid crosses, incomplete dominance, codominance, multiple alleles, sex linked traits, sex limited traits, polygenic inheritance, pedigrees, karyotypes, chromosomal disorders, homologous chromosomes.	Face head variation, Pedigree chart Karyotype lab-Insect <i>*Mendelian Genetic Lab</i> <i>*Probability Lab</i> <i>*Analysis of Karyotype</i>	HE.4.B.1 Summarize the outcomes of Gregor Mendel's experimental procedures HE.4.B.2 Differentiate among the laws and principles of inheritance: <ul style="list-style-type: none"> dominance segregation independent assortment HE.4.B.3 Use the laws of probability and Punnett squares to predict genotypic and phenotypic ratios HE.4.B.4 Examine different modes of inheritance: <ul style="list-style-type: none"> sex linkage codominance crossing over incomplete dominance multiple alleles HE.4.B.5 Analyze the historically significant work of prominent geneticists HE.4.B.6 Evaluate karyotypes for abnormalities: <ul style="list-style-type: none"> monosomy trisomy NS.12.B.6 Relate the chromosome theory of heredity to recent findings in genetic research (e.g., Human Genome Project-HGP, chromosome therapy)	<div style="border: 1px solid red; padding: 2px;">... [5]</div> <div style="border: 1px solid red; padding: 2px;">Formatted: Font: 8 pt</div> <div style="border: 1px solid red; padding: 2px;">Formatted Table</div> <div style="border: 1px solid red; padding: 2px;">Deleted: TER</div> <div style="border: 1px solid red; padding: 2px;">Deleted:</div> <div style="border: 1px solid red; padding: 2px;">Formatted: Bullets and Numbering</div> <div style="border: 1px solid red; padding: 2px;">Deleted: Cystic Fibrosis Interactive Exploration</div> <div style="border: 1px solid red; padding: 2px;">Formatted: Bullets and Numbering</div>
4	9, 10, 11	DNA, Replication Protein Synthesis, Genetic Technology	DNA, double helix, nucleotide, replication, polymerase, Vaccine, mRNA, tRNA, rRNA, operon, intron, exon, codon, translation, transcription, genetic code Nucleotides, structure and function, DNA importance, DNA code, double helix, point mutation and frameshift mutation, genetic engineering, human genome. Strands, five prime, three prime ends. Genetic engineering, recombinant DNA, DNA fingerprint, cloning, plasmid, electrophoresis	Construct DNA model Nightline Cloning Video, Interpreting DNA Fingerprint p235 <i>*DNA Isolation Lab</i> <i>*Transcription, Replication,</i> <i>*Protein synthesis Paper Lab</i>	HE.5.B.1 Model the components of a DNA nucleotide and an RNA nucleotide HE.5.B.2 Describe the Watson-Crick double helix model of DNA, using the base-pairing rule (adenine-thymine, cytosine-guanine) HE.5.B.3 Compare and contrast the structure and function of DNA and RNA HE.5.B.4 Describe and model the processes of replication, transcription, and translation HE.5.B.5 Compare and contrast the different types of mutation events, including point mutation, frameshift mutation, deletion, and inversion HE.5.B.6 Identify effects of changes brought about by mutations: <ul style="list-style-type: none"> beneficial harmful neutral NS.14.B.4 Explain how the cyclical relationship between science and technology results in reciprocal advancements in science and technology	<div style="border: 1px solid red; padding: 2px;">Deleted: (2.02) Use Mendel's Laws to interpret patterns of inheritance</div> <div style="border: 1px solid red; padding: 2px;">Deleted: Leotide</div> <div style="border: 1px solid red; padding: 2px;">Deleted:</div> <div style="border: 1px solid red; padding: 2px;">Formatted: Bullets and Numbering</div> <div style="border: 1px solid red; padding: 2px;">Deleted:</div> <div style="border: 1px solid red; padding: 2px;">Deleted: (2.01) Investigate the molecular basis of heredity?DNA (replication, protein synthesis)</div>
1	Plan Test	All	ACT Practice			
1	All	Semester	All	All		All

DA YS	CHAR	TOPIC	SUB-TOPICS	LABS	Framework
8	16, 17, 18, 19	Ecology	Biosphere, abiotic, biotic, heirarchy, feeding relationships, ecological cycles, biomes and populations. Demography, density dependent and independent, exponential growth (16) Populations (17) Ecosystems, energy, cycles, Water, nitrogen and Carbon and Oxygen, food chains, Food webs, (18) Biomes, symbiotic relationships (19) Human Impact	Owl Pellet Design food web <u>*Biodiversity Lab</u> <u>*Water Analysis</u> <u>*Soil Analysis</u> <u>*Build a Biome</u>	<u>EBR.8.B.1 Cite examples of abiotic and <i>biotic</i> factors of ecosystems</u> <u>EBR.8.B.2 Compare and contrast the characteristics of <i>biomes</i></u> <u>EBR.8.B.3 Diagram the carbon, nitrogen, phosphate, and water cycles in an <i>ecosystem</i></u> <u>EBR.8.B.4 Analyze an <i>ecosystem's</i> energy flow through food chains, food webs, and <i>energy pyramids</i></u> <u>EBR.8.B.5 Identify and predict the factors that control <i>population</i>, including <i>predation, competition, crowding, water, nutrients, and shelter</i></u> <u>EBR.8.B.6 Summarize the symbiotic ways in which individuals within a <i>community</i> interact with each other:</u> <ul style="list-style-type: none"> ▪ <u><i>commensalism</i></u> ▪ <u><i>parasitism</i></u> ▪ <u><i>mutualism</i></u> <u>EBR.8.B.7 Compare and contrast <i>primary succession</i> with <i>secondary succession</i></u> <u>EBR.8.B.8 Identify the properties of each of the five levels of <i>ecology</i>:</u> <ul style="list-style-type: none"> ▪ <u><i>organism</i></u> ▪ <u><i>population</i></u> ▪ <u><i>community</i></u> ▪ <u><i>ecosystem</i></u> ▪ <u><i>biosphere</i></u> <u>EBR.9.B.1 Analyze the effects of human <i>population</i> growth and <i>technology</i> on the <i>environment/biosphere</i></u> <u>EBR.9.B.2 Evaluate long range plans concerning resource use and by-product disposal in terms of their environmental, economic, and political impact</u> <u>EBR.9.B.3 Assess current world issues applying scientific themes (e.g., global changes in climate, <i>epidemics, pandemics, ozone depletion, UV radiation, natural resources, use of technology, and public policy</i>)</u> <u>MC.2.B.1 Construct a hierarchy of life from cells to <i>ecosystems</i></u> <u>NS.14.B.3 Evaluate long-range plans concerning resource use and by-product disposal for environmental, economic, and political impact</u>
3	13, (14)	Evolution	Natural Selection and Theories	<u>Natural Selection and Adaptation</u> <u>*Fossil Lab</u> <u>*Radioactive Decay</u>	<u>HE.6.B.1 Compare and contrast Lamarck's explanation of <i>evolution</i> with Darwin's <i>theory of evolution by natural selection</i></u> <u>HE.6.B.2 Recognize that <i>evolution</i> involves a change in allele frequencies in a <i>population</i> across successive generations</u> <u>HE.6.B.3 Analyze the effects of <i>mutations</i> and the resulting <i>variations</i> within a <i>population</i> in terms of <i>natural selection</i></u> <u>HE.6.B.4 Illustrate <i>mass extinction</i> events using a time line</u> <u>HE.6.B.5 Evaluate <i>evolution</i> in terms of evidence as found in the following:</u> <ul style="list-style-type: none"> • <u><i>fossil record</i></u> • <u><i>DNA analysis</i></u> • <u><i>artificial selection</i></u> • <u><i>morphology</i></u> • <u><i>embryology</i></u> • <u><i>viral evolution</i></u> • <u><i>geographic distribution of related species</i></u> • <u><i>antibiotic and pesticide resistance in various organisms</i></u> <u>HE.6.B.6 Compare the processes of <i>relative dating</i> and <i>radioactive dating</i> to determine the age of fossils</u> <u>HE.6.B.7 Interpret a <i>Cladogram</i></u> <u>NS.12.B.3 Summarize <i>biological evolution</i></u>

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Deleted: (4.01) Identify the interrelationships among organisms, populations, community, ecosystems and biomes¶
(4.02) Analyze the flow of energy through various cycles: nitrogen, carbon, water, and oxygen.¶
Investigate and explain the interactions in an ecosystem: food chains, webs and pyramids.¶
(4.04) Evaluate and explain the behavioral interactions resulting from the combination of heredity, evolution, and environment.¶
(5.03) Evaluate long-range plans for resource use EX. Environmental concerns, Economic Concerns, Health Concerns, Recycling¶
(5.04) Identify environmental problems and propose possible solutions, EX Human Population Growth, Acid Precipitation, Global Changes in Climate, Ozone Depletion, UV Radiation

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(2.04) Examine the development of the theory of biological evolution EX. Origin of Life, Geologic time, fossil records, and dating techniques, natural selection, speciation, and adaptive radiation, Patterns of Change (mimicry, ... [7]

DA YS	CHAR	TOPIC	SUB-TOPICS	LABS	Framework
3	15, 20	Classification Kingdoms	Relationships, dichotomous keys , taxons, binomial nomenclature.	Taxonomy Lab, Dichotomous Keys, Leaf Collection in the Fall Term Shark Key How Do You Make a Dichotomous Key	<p><u>CDL.7.B.1 Differentiate among the different domains:</u></p> <ul style="list-style-type: none"> • Bacteria • Archaea • Eukarya <p><u>CDL.7.B.2 Differentiate the characteristics of the six kingdoms:</u></p> <ul style="list-style-type: none"> • Eubacteria • Archaea • Protista • Fungi • Plantae • Animalia <p><u>CDL.7.B.3 Identify the seven major taxonomic categories:</u></p> <ul style="list-style-type: none"> • kingdom • phylum • class • order • family • genus • species <p><u>CDL.7.B.4 Classify and name organisms based on their similarities and differences applying taxonomic nomenclature using dichotomous keys</u></p> <p><u>CDL.7.B.5 Investigate Arkansas' biodiversity using appropriate tools and technology</u></p>
6	21, 22, 23	Viruses, Bacteria, Protist, Fungi	Structure of viruses, lytic and lysogenic cycle, retrovirus, RNA lytic virus, bacteria, classification and structure, penicillin affects, adaptations for survival, reproduction, economic importance, prions, viroids, Animal like, plantlike and fungi like phyla, amoeba, paramecium, euglena	Virus replication Bacteria cultures Antibiotic Biolab , Pond water lab Prepared Slide Lab <i>*Spread of Infectious Disease, Aids Lab *Fungi Lab</i>	<p><u>CDL.7.B.6 Compare and contrast the structures and characteristics of viruses (lytic and lysogenic cycles) with non-living and living things</u></p> <p><u>CDL.7.B.7 Evaluate the medical and economic importance of viruses</u></p> <p><u>CDL.7.B.9 Classify bacteria according to their characteristics and adaptations</u></p> <p><u>CDL.7.B.10 Evaluate the medical and economic importance of bacteria</u></p> <p><u>CDL.7.B.11 Describe the characteristics used to classify protists:</u></p> <ul style="list-style-type: none"> ▪ plant-like ▪ animal-like ▪ fungal-like <p><u>CDL.7.B.12 Evaluate the medical and economic importance of protists</u></p> <p><u>CDL.7.B.13 Compare and contrast fungi with other eukaryotic organisms</u></p> <p><u>CDL.7.B.14 Evaluate the medical and economic importance of fungi</u></p> <p><u>NS.12.B.5 Describe the relationship between the germ theory of disease and our current knowledge of immunology and control of infectious diseases</u></p> <p><u>EBR.9.B.3 Assess current world issues applying scientific themes (e.g., global changes in climate, epidemics, pandemics, ozone depletion, UV radiation, natural resources, use of technology, and public policy)</u></p>
8	28,29,30,31, 32	Animal Characteristics, Invertebrates.	Animal development, symmetry, body plans, sponge, Cnidarians, flatworms, roundworms, segmented worms, mollusks, starfish, arthropods.	Dissect Ascaris, Earthworm, Crayfish How Do Pill Bugs Respond to Stimuli <i>*Comparative Anatomy Lab</i>	<p><u>CDL.7.B.20 Identify the symmetry of organisms:</u></p> <ul style="list-style-type: none"> ▪ radial ▪ bilateral ▪ asymmetrical <p><u>CDL.7.B.21 Compare and contrast the major invertebrate classes according to their nervous, respiratory, excretory, circulatory, and digestive systems</u></p>

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(3.02) Classify organisms according to currently accepted systems Ex Organ systems of animals (including levels of organization: cells, tissues, organs, organ systems, and homeostasis) EX. Functional systems of plants (transport, reproduction, regulation)

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(3.05) Describe the structure of viruses and bacteria and explain their biological relationships with organisms (beneficial and pathogenic), (3.04) REPEAT Compare and contrast the processes of reproduction , growth, development (... [9])

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7	33,34,35,36,37	Vertebrates	Fish, amphibians, birds, reptiles and mammals, comparative anatomy, animal behavior	Dissect Frog Multimedia Presentation Studying Nonverbal Communication p. 850	CDL.7.B.22 Compare and contrast the major vertebrate classes according to their nervous, respiratory, excretory, circulatory, digestive, reproductive and integumentary systems.
8	24, 25, 26, 27	Plants	Plant divisions, life cycle of moss, ferns and gymnosperms, angiosperms, dicots, monocots, lifespans, roots, stems, leaves, flowers, pollination, germination, vascular tissue, stomata, tropisms, seed and fruit formation, hormones, seed dispersal, growth and development.	Leaf Collection in The Spring Term Dissect Seed and Flower Capillary Action Comparing Bean and Corn Seedlings p. 606 *Plant Anatomy (Root, Stem, Leaf, Seed) *Use of Dichotomous Keys	CDL.7.B.15 Differentiate between vascular and nonvascular plants CDL.7.B.16 Differentiate among cycads, gymnosperms, and angiosperms CDL.7.B.17 Describe the structure and function of the major parts of a plant: <ul style="list-style-type: none"> ▪ roots ▪ stems ▪ leaves ▪ flowers CDL.7.B.18 Relate the structure of plant tissue to its function <ul style="list-style-type: none"> • epidermal • ground • vascular CDL.7.B.19 Evaluate the medical and economic importance of plants CDL.7.B.5 Investigate Arkansas' biodiversity using appropriate tools and technology
1	Career Watch Arkansas	Science Careers			NS.15.B.1 Research and evaluate science careers using the following criteria: <ul style="list-style-type: none"> ▪ educational requirements ▪ salary ▪ availability of jobs ▪ working conditions
		Ongoing Skills	These skills will be incorporated throughout the year		NS.13.B.1 Collect and analyze scientific data using appropriate mathematical calculations, figures, and tables NS.13.B.2 Use appropriate equipment and technology as tools for solving problems (e.g., microscopes, centrifuges, flexible arm cameras, computer software and hardware) NS.13.B.3 Utilize technology to communicate research findings NS.12.B.7 Research current events and topics in biology NS.12.B.7 Research current events and topics in biology
1	End of Course Test	All	All		

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The learner will demonstrate an understanding of life science as a process of inquiry. The content goals will incorporate historical and cultural aspects, standard safety procedures, Laboratory experiences and the scientific method.

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Repeat (3.01) Relate the variety of living organisms to their evolutionary relationships (Cladistics, systemic Phylogeny) (2.04) Examine the development of the theory of biological evolution EX. Origin of Life, Geologic time, fossil records, and dating techniques, natural selection, speciation, and adaptive radiation, Patterns of Change (mimicry, camouflage), Variations, Mutation/Adaptation, Changes in Population		

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Identify the role that evolution plays in antibiotics and pesticide resistance, genetic engineering, genetic counseling, bioethics and outcomes from the human Genome project. (3.05) Describe the structure of viruses and bacteria and explain their biological relationships with organisms (beneficial and pathogenic), (3.04) REPEAT Compare and contrast the processes of reproduction , growth, development, and regulation in major phyla of organisms		

Page 7: [10] Deleted	Pmccutchen	6/13/2006 4:08:00 PM
3.04) REPEAT Compare and contrast the processes of reproduction , growth, development, and regulation in major phyla of organisms		

Page 1: [11] Deleted	Pmccutchen	6/12/2006 8:46:00 AM
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