

Biology I

INSTRUCTIONAL PACING GUIDE

(DAYS BASED ON 90 MINUTE BLOCK)

DATES TAUGHT	SUGGESTED PACING	OBJECTIVES	RESOURCES
FIRST NINE WEEKS			
Lesson 1			
	4 Days (90 min. block)	<p>B-3.4 Summarize how the structures of organic molecules (including proteins, carbohydrates, and fats) are related to their relative caloric values.</p> <p>B-3.5 Summarize the functions of proteins, carbohydrates, and fats in the human body.</p> <p>Scientific Inquiry B-1 The student will demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions.</p>	<p>Textbook /Study Guide Resources:</p> <ul style="list-style-type: none"> Biology McDougall Littell 2.3 Carbon Based Molecules , 32.1 Nutrients and Homeostasis Modern Biology (Holt, Rinehart and Winston) 3.1 Carbon Compounds, 3.2 Molecules of Life, 48.1 Nutrients <p>Literacy Element Organic Molecule Comparisons (Graphic Organizers)</p> <p>Instructional Activities</p> <ul style="list-style-type: none"> S3 Activities B-3.4a-Calorimeter lab, 3.5a-Biological Compounds Foldable, 3.5b, Biological Compounds Review <p>Interactive Websites Nutrition.gov - http://www.nutrition.gov/nal_display/index.php?info_center=11&tax_level=1&tax_subject=388</p> <p>Calorie Counter http://www.my-calorie-counter.com/about.asp or http://www.principalhealthnews.com/topic/macronutrient contains a calculator which allows one to input biofacts and receive the amount of macronutrients needed daily</p> <p>What's in a Label - http://biology4teachers.com/biochemistry/Percentage%20of%20Lipids,%20Carb,%20Proteins%20in%20foods.pdf -</p> <p>Food Chemistry Testing for Sugar, Starch, Protein, or Fat http://www.sciencecompany.com/sci-exper/food_chemistry.htm</p> <p>http://biology4teachers.com/Index_Biochemistry_files/slide0001.htm (click on macromolecule graphic organizer on the right) different graphic organizer for macromolecules</p> <p>http://www.lessonsnips.com/docs/pdf/moleculerlife.pdf reading information with questions following</p> <p>http://www.lessonplansinc.com/science.php/biology/types/Worksheet/P10/ Go to the macromolecule handout on this page</p> <p>Tutorial http://media.pearsoncmg.com/bc/bc_campbell_biology_6/medialib/assets/interactivemedia/activities/C6eActivityServer.html?06&04&C:%20How%20Enzymes%20Work</p>
ADMINISTER SCHOOL-BASED INTERIM ASSESSMENT			
Lesson 2			
	10 Days (90 min. Block)	<p>B-2.8 Explain the factors that affect the rates of biochemical reactions (including pH, temperature, and the role of enzymes as catalysts).</p> <p>Scientific Inquiry B-1 The student will demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions.</p>	<p>Textbook /Study Guide Resources:</p> <ul style="list-style-type: none"> Biology McDougall Littell 2.4 Chemical Reactions Modern Biology (Holt, Rinehart and Winston) 2.2 Energy <p>Literacy Element Factors Affecting Rates of Reaction Concept Map</p> <p>Instructional Activities</p> <ul style="list-style-type: none"> S3 Activities B-2.8a, Catalyst of Life Lab, B-2.8b, Enzyme Activity Review, B-2.8d, Enzymatic Activity Lab <p>Interactive Websites How Enzymes Work - Tutorial http://media.pearsoncmg.com/bc/bc_campbell_biology_6/medialib/assets/interactivemedia/activities/C6eActivityServer.html?06&04&C:%20How%20Enzymes%20Work</p> <p>The Role of Enzymes http://highered.mcgraw-hill.com/sites/0072495855/student_view0/chapter2/animation_how_enzymes_work.html</p>
ADMINISTER SCHOOL-BASED INTERIM ASSESSMENT			

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FIRST NINE WEEKS (CONTINUED)			
Lesson 3			
	16 Days (90 min. block)	<p>B-2.1 Recall the three major tenets of cell theory (all living things are composed of one or more cells, cells are the basic units of structure and function in living things; and all presently existing cells arose from previous existing cells).</p> <p>B-2.2 Summarize the structures and functions of organelles found in a eukaryotic cell (including the nucleus, mitochondria, chloroplasts, lysosomes, vacuoles, ribosomes, endoplasmic reticulum [ER], Golgi apparatus, cilia, flagella, cell membrane, nuclear membrane, cell wall, and cytoplasm).</p> <p>B-2.3 Compare the structures and organelles of prokaryotic and eukaryotic cells.</p> <p>B-2.4 Explain the process of cell differentiation as the basis for the Hierarchical organization of organisms (including cells, tissues, organs, and organ systems).</p> <p>Scientific Inquiry B-1 The student will demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions.</p>	<p>Textbook /Study Guide Resources:</p> <ul style="list-style-type: none"> • Biology McDougall Littell 3.1 Cell Theory, 3.2 Cell Organelles, 3.3 Cell Membrane, 5.5 Multicellular Life • Modern Biology Holt, Rinehart and Winston 4.1 Cell Theory, 4.2 Introduction to Cells, 4.3 Cell Organelles and Features, 4.4 Unique Features of Plant Cells, 1.1 The World of Biology <p>Literacy Element</p> <ul style="list-style-type: none"> • Cell Structure/Function Visual and Word Association <p>Instructional Activities</p> <ul style="list-style-type: none"> • S3 Activities B-2.1a-Cell Theory Microscope Lab, 2.1b-Cell Theory Foldable, 2.3a-Cell Comparison Activity, 2.3b-Cell Organelle Quiz, 2.3c-Prokaryote and Eukaryote Microscope Lab, 2.2a-Cell Functions, 2.2b-Plant vs. Animal Cells, 2.2c-Athletic Cell Project, 2.2e-Cell Analogies Book Project, 2.2f-Eukaryote Organelles • Lab: Microscope, Viewing cells under microscope Organelle/Cell Types/Kinds http://biologycorner.com/worksheets/e-lab.html • A Hard Sell on Stem Cells: Learning About Different Types of Stem Cells- http://learning.blogs.nytimes.com/2005/10/18/a-hard-sell-on-stem-cells/ <p>Interactive Websites</p> <ul style="list-style-type: none"> • Cells Alive www.cellsalive.com • Animated Biology, Chapter 1: Cells Through Different Microscopes www.classzone.com • Cell Structure http://www.wiley.com/legacy/college/boyer/0470003790/animations/cell_structure/cell_structure.htm • Cell Membranes Tutorial http://www.biology.arizona.edu/cell_bio/problem_sets/membranes/index.html • The Cell Membrane and Surface Area Demos http://www.accessexcellence.org/AE/ATG/data/released/0307-TrumanHoltzclaw/index.php • Drag and Drop Cell Organelles http://www.execulink.com/~ekimmel/drag_gr11/organell.htm <p>Instructional Videos (United Streaming) United Streaming Videos:</p> <ul style="list-style-type: none"> • Prokaryotes vs. Eukaryotes • Plant and Animal Cells) • The Cell • Organelles • Cells: The Basic Units of Life • Plant and Animal Cells
ADMINISTER SCHOOL-BASED INTERIM ASSESSMENT			
ADMINISTER DISTRICT FALL ASSESSMENT			

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SECOND NINE WEEKS			
Lesson 1			
	<p>B-2.5 Explain how active, passive, and facilitated transport serve to maintain the homeostasis of the cell.</p> <p>Scientific Inquiry</p> <p>B-1 The student will demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions.</p>	8 Days	<p>Textbook /Study Guide Resources:</p> <ul style="list-style-type: none"> • Biology McDougall Littell 3.3 Cell Membrane, 3.4 Diffusion and Osmosis, 3.5 Active Transport • Modern Biology Holt, Rinehart and Winston 5.1 Passive Transport 5.2 Active Transport <p>Literacy Element Compare/Contrast active, passive, and facilitated transport (Graphic Organizer)</p> <p>Instructional Activities</p> <ul style="list-style-type: none"> • S3 Activities Activity 2.5a – Cellular Transport Foldable, Activity 2.5b – Cellular Transport Quiz, Activity 2.5c – Egg Lab, Activity 2.5d – Plastic Bag Lab <p>Interactive Websites</p> <ul style="list-style-type: none"> • Passive Transport http://player.discoveryeducation.com/index.cfm?guidAssetId=EE86FD99-F075-49FD-BBDC-61DE73CA949F&blnFromSearch=1&productcode=US • How Facilitated Diffusion Works http://highered.mcgraw-hill.com/sites/0072495855/student_view0/chapter2/animation_how_facilitated_diffusion_works.html • How the Sodium- Potassium Pump Works http://highered.mcgraw-hill.com/sites/0072495855/student_view0/chapter2/animation_how_the_sodium_potassium_pump_works.html <p>Instructional Videos (United Streaming)</p> <ul style="list-style-type: none"> • Passive Transport • Simply Science: Matter and Energy on The Move
ADMINISTER SCHOOL-BASED INTERIM ASSESSMENT			
Lesson 2			
	<p>B-2.6 Summarize the characteristics of the cell cycle: interphase (called G1, S, G2); the phases of mitosis (called prophase, metaphase, anaphase, and telophase); and plant and animal cytokinesis.</p> <p>B-4.5 Summarize the characteristics of the phases of meiosis I and II.</p> <p>B-2.7 Summarize how cell regulation controls and coordinates cell growth and division and allows cells to respond to the environment, and recognize the consequences of uncontrolled cell division.</p> <p>Scientific Inquiry</p> <p>B-1 The student will demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions.</p>	14 Days	<p>Textbook /Study Guide Resources</p> <ul style="list-style-type: none"> • Biology McDougall Littell 5.1 Cell Cycle, 5.2 Mitosis and Cytokinesis, 5.3 Regulation of the Cell Cycle, 6.1 Chromosome and Meiosis, 6.2 Stages of Meiosis • Modern Biology Holt, Rinehart and Winston 8.1 Chromosomes, 8.2 Cell Division, 8.3 Meiosis, 10.3 DNA Replication <p>Literacy Element</p> <ul style="list-style-type: none"> • Cell Cycle Foldable http://archive.ndsj.org/classes/yi/biology/bio_pdfs/Mitosis_foldable.pdf <p style="text-align: center;">or</p> <p>http://stpeter.pbworks.com/w/file/fetch/47831701/CELL%20CYCLE.pdf</p> <ul style="list-style-type: none"> • Meiosis Graphic Organizers Process - http://www.science-class.net/Graphic_Organizers/GO_meiosis.pdf Summary - http://www.science-class.net/Graphic_Organizers/GO_meiosis_results.pdf • Cause/Effect Web – Cell Regulation, Consequences of Unregulated Cell Division <p>Instructional Activities</p> <ul style="list-style-type: none"> • S3 Activities Activity B-2.6a - How Cells Reproduce – Mitosis, Activity B-2.6b - Mitosis Diagram Identification, Activity B-2.6c - What Happens When Cells Divide?, Activity B-4.5a -Meiosis Web Quest, Activity B-4.5b - Meiosis Concentration, Activity B-4.5c -Meiosis Diagrams, Activity B-4.5d - Meiosis Sketches <p>Interactive Websites</p> <ul style="list-style-type: none"> • The Cell Cycle – Cells Alive http://www.cellsalive.com/cell_cycle.htm • Control of the Cell Cycle http://www.nobelprize.org/educational/medicine/2001/ • The Cell Cycle and Mitosis Tutorial http://www.biology.arizona.edu/Cell_bio/tutorials/cell_cycle/cells3.html • Mitosis: A Stage of the Cell Cycle http://www.quia.com/pp/1000.html?AP_rand=1643257270 • Virtual Lab: The Cell Cycle and Cancer http://www.mhhe.com/biosci/genbio/virtual_labs_2K8/labs/BL_03/index.html • Cell Biology and Cancer http://science.education.nih.gov/supplements/nih1/cancer/guide/intro1.htm • A Hard Sell on Stem Cells http://learning.blogs.nytimes.com/2005/10/18/a-hard-sell-on-stem-cells/ <p>Instructional Videos (United Streaming)</p> <ul style="list-style-type: none"> • Biologix: Cell Cycle, Mitosis, and Cytoplasmic Streaming • Video segment: Life Cycle of the Cell and Cell Division • How Cancer Spreads (http://www.mayoclinic.com/health/cancer/MM00638) • Bioclips: Cell Division (http://wormclassroom.org/cell-division-and-polarity)
ADMINISTER SCHOOL-BASED INTERIM ASSESSMENT			

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DATES TAUGHT	INDICATORS	SUGGESTED PACING	RESOURCES
SECOND NINE WEEKS (CONTINUED)			
Lesson 3			
	<p>B-3.3 Recognize the overall structure of adenosine triphosphate (ATP)—namely, adenine, the sugar ribose, and three phosphate groups—and summarize its function (including the ATP-ADP [adenosine diphosphate] cycle).</p> <p>B-3.1 Summarize the overall process by which photosynthesis converts solar energy into chemical energy and interpret the chemical equation for the process</p> <p>B-3.2 Summarize the basic aerobic and anaerobic processes of cellular respiration and interpret the chemical equation for cellular respiration</p> <p>Scientific Inquiry B-1 The student will demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions</p>	8 Days	<p>Textbook /Study Guide Resources:</p> <ul style="list-style-type: none"> • Biology McDougall Littell 4.1 Chemical Energy and ATP, 4.2 Overview of Photosynthesis, 4.3 Photosynthesis in Detail, 4.4 Overview of Cellular Respiration , 4.5 Cellular Respiration in Detail, 4.6 Fermentation • Modern Biology Holt, Rinehart and Winston 6.1 The Light Reactions, 6.2 The Calvin Cycle, 7.1 Glycolysis and Fermentation, 7.2 Aerobic Respiration <p>Literacy Element</p> <ul style="list-style-type: none"> • ATP Compare/Contrast Graphic Organizer • ATP-ADP Cycle Graphic Organizer • Cellular Respiration Storyboard http://cavalierscience.blogspot.com/2010/06/cellular-respiration-graphic-organizer.html • Photosynthesis Flowchart <p>Instructional Activities</p> <ul style="list-style-type: none"> • S3 Activities Activity B-3.1a - Examining the Relationship Between Photosynthesis and Cellular Respiration, Activity B-3.2a - Terrestrial Sequestration Photosynthesis and Cellular Respiration, Activity B 3.2b - Anaerobic Cellular Respiration, Activity B-3.2c - How does exercise affect cellular respiration? <p>Interactive Websites</p> <ul style="list-style-type: none"> • Photosynthesis Overview http://academic.cengage.com/biology/discipline_content/animations/photosynthesis_summary_v2.html • Cellular Respiration http://www.sumanasinc.com/webcontent/animations/content/cellularrespiration.html • How Cells Release Chemical Energy http://www.wadsworthmedia.com/biology/0495119814_starr/big_picture/ch07_bp.html <p>Instructional Videos</p> <ul style="list-style-type: none"> • Cellular Respiration and Photosynthesis http://www.teachertube.com/viewVideo.php?video_id=159339&title=Cellular_Respiration_and_Photosynthesis
ADMINISTER SCHOOL-BASED INTERIM ASSESSMENT			
ADMINISTER DISTRICT WINTER ASSESSMENT			

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DATES TAUGHT	INDICATORS	SUGGESTED PACING	RESOURCES
THIRD NINE WEEKS			
Lesson 1			
	<p>B-4.1 Compare DNA and RNA in terms of structure, nucleotides, and base pairs.</p> <p>B-4.2 Summarize the relationship among DNA, genes, and chromosomes.</p> <p>B-4.3 Explain how DNA functions as the code of life and the blueprint for proteins.</p> <p>B-4.4 Summarize the basic processes involved in protein synthesis (including transcription and translation).</p> <p>Scientific Inquiry B-1 The student will demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions.</p>	12 Days	<p>Textbook /Study Guide Resources:</p> <ul style="list-style-type: none"> • Biology McDougall Littell 8.2 Structure of DNA, 8.3 DNA Replication, 8.4 Transcription, 8.5 Translation, 8.6 Gene Expression and Regulation, 6.4 Traits, Genes, and Alleles, • Modern Biology Holt, Rinehart and Winston 8.1 Chromosomes, 10.2 DNA Structure, 10.4 Protein Synthesis <p>Literacy Element</p> <ul style="list-style-type: none"> • Compare/contrast DNA and RNA • DNA, Genes, Chromosomes <p>http://www.science-class.net/Graphic_Organizers/GO_3definitions_DNA.pdf</p> <ul style="list-style-type: none"> • Concept map – Function of DNA • Protein Synthesis Storyboard <p>http://cavalierscience.blogspot.com/2010/06/protein-synthesis-graphic-organizer.html</p> <p>Instructional Activities</p> <ul style="list-style-type: none"> • S3 Activities Activity B-4.1a - Building RNA And DNA, Activity B-4.1b - Comparing DNA And RNA, Activity B-4.1c - Comparing DNA And RNA, Activity B-4.2a - Chromosome Packing, Activity B-4.2b - What's In Common?, Activity B-4.3a - DNA - The Double Helix, Activity B-4.4a/B- 4.8 - How Proteins Are Made, Activity B-4.4b - Groovy DNA Beads, Activity B-4.4c - Translation Activity, Activity B-4.4d – Bug Lab Project, Activity B-4.4e - DNA Dry Lab <p>Interactive Websites</p> <ul style="list-style-type: none"> • Transcribe and Translate a Gene http://learn.genetics.utah.edu/content/begin/dna/transcribe/ • DNA Workshop http://www.pbs.org/wgbh/aso/tryit/dna/# • Journey into DNA http://www.pbs.org/wgbh/nova/genome/dna.html# • Create a DNA Fingerprint http://www.pbs.org/wgbh/nova/teachers/body/create-dna-fingerprint.html • DNA to Protein http://learn.genetics.utah.edu/content/begin/dna/ <p>Instructional Videos (United Streaming)</p> <ul style="list-style-type: none"> • Biology: The Science of Life: DNA: The Master Molecule of Life • Biologix: Transcription of DNA to Messenger RNA • Biologix: DNA Replication • Biologix: Translation and Protein Synthesis
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THIRD NINE WEEKS (CONTINUED)			
Lesson 2			
	<p>B-4.6 Predict inherited traits by using the principles of Mendelian genetics (including segregation, independent assortment, and dominance.</p> <p>Scientific Inquiry B-1 The student will demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions</p>	6 Days	<p>Textbook /Study Guide Resources</p> <ul style="list-style-type: none"> • Biology McDougall Littell 6.3 Mendel and Heredity, 6.4 Traits, Genes, and Alleles, 6.5 Traits and Probability, 7.1 Chromosomes and Phenotype, 7.2 Complex Patterns of Inheritance, 7.4 Human Genetics and Pedigrees, • Modern Biology Holt, Rinehart and Winston 9.1 Mendel’s Legacy, 9.2 Genetic Crosses, 12.1 Chromosomes and Inheritance, 12.2 Human Genetics <p>Literacy Element</p> <ul style="list-style-type: none"> • Genetics Vocabulary http://www.science-class.net/Graphic_Organizers/GO_4squarevocab_genetics.pdf • Matrix for Mendel’s Laws • Punnett Squares – Monohybrid and Dihybrid Crosses <p>Instructional Activities</p> <ul style="list-style-type: none"> • S3 Activities Activity B-4.6e - Chromosomal Traits (Pipe Cleaner Babies) • Genetic Science Learning Center http://learn.genetics.utah.edu/ • Genetics For The Whole Family-Mendelian Genetics http://www.nrc-cnrc.gc.ca/eng/education/teachers/life/module_10-12.html <p>Interactive Websites</p> <ul style="list-style-type: none"> • The Biology Project: Mendelian Genetics http://www.biology.arizona.edu/mendelian_genetics/mendelian_genetics.html • Drag-and-Drop Genetics http://www.zerobio.com/drag_gr11/mono.htm • Pea Experiment http://sonic.net/~nbs/projects/anthro201/exper/ • Lab Center: Mendelian Genetics http://labcenter.dnalc.org/labs/mendeliangenetics/mendeliangenetics_h.html <p>Instructional Videos (United Streaming)</p> <ul style="list-style-type: none"> • Understanding Genetics • Biologix: Alternate Patterns of Inheritance • Elements of Biology: Genetics: The Molecular Basis of Heredity • Greatest Discoveries with Bill Nye: Genetics • Biologix: Alternate Patterns of Inheritance
ADMINISTER SCHOOL-BASED INTERIM ASSESSMENT			

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THIRD NINE WEEKS (CONTINUED)			
Lesson 3			
	<p>B-4.7 Summarize the chromosome theory of inheritance and relate that theory to Gregor Mendel's principles of genetics.</p> <p>B-4.8 Compare the consequences of mutations in body cells with those in gametes.</p> <p>Scientific Inquiry B-1 The student will demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions</p>	6 Days	<p>Textbook /Study Guide Resources:</p> <ul style="list-style-type: none"> • Biology McDougall Littell 6.1 Chromosome and Meiosis, 6.3 Mendel and Heredity, 6.4 Traits, Genes, and Alleles, 6.6 Meiosis and Genetic Variation, 7.1 Chromosomes and Phenotype, 7.3 Gene Linkage and Mapping, • Modern Biology Holt, Rinehart and Winston 9.1 Mendel's Legacy, 9.2 Genetic Crosses, 12.1 Chromosomes and Inheritance, 12.2 Human Genetics <p>Literacy Element</p> <ul style="list-style-type: none"> • Concept Map-Chromosome Theory of Inheritance • Punnett squares – Incomplete dominance, codominance, multiple alleles, polygenic traits, sex-linked traits • Pedigree Practice Problems • Cause/Effect Graphic Organizer – Consequences of Mutations <p>Instructional Activities</p> <ul style="list-style-type: none"> • S3 Activities Activity B-4.7a - Genetics: X Linked Genes, Activity B-4.7b – Pedigrees, Activity B-4.7c- Mend- Aliens, Activity B-4.7d- Genetics – Multiple Alleles, Activity B-4.8a - A Chromosome Study, Activity B-4.8b - Making Karyotypes, Activity B-4.8c - Chromosomal Mutations, Activity B-4.8a - Genetic Mutation, Activity: B-4.8b - Venn Diagram, Activity B-4.8c - Autosomal Disorders In Humans • Recovering the Romanovs http://www.dnai.org/teacherguide/pdf/ts_romanovs.pdf • Pick the Risk: The Polygenic Pedigree Challenge http://learn.genetics.utah.edu/content/begin/traits/activities/pdfs/Pick%20the%20Risk_Public.pdf • Finding a Gene on the Chromosome Map http://teach.genetics.utah.edu/content/begin/dna/findagene.pdf • Cast Your Net: Adventures With Blood http://teachhealthk-12.uthscsa.edu/curriculum/blood/blood-pdf/blood-03C-4all.pdf <p>CoInteractive Websites</p> <ul style="list-style-type: none"> • Drag-and-Drop Pedigree http://www.zerobio.com/drag_gr11/pedigree/pedigree_overview.htm • Heredity and Traits http://learn.genetics.utah.edu/content/begin/traits/ • Drag-and-Drop Pedigree: Tongue Rolling http://www.zerobio.com/drag_gr11/pedigree/pedigree1.htm <p>Instructional Videos</p> <ul style="list-style-type: none"> • Elements of Biology: Genetics: The Molecular Basis of Heredity • Genetics, Genes, and DNA

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THIRD NINE WEEKS (CONTINUED)			
	<p>B-4.9 Exemplify ways that introduce new genetic characteristics into an organism or a population by applying the principles of modern genetics.</p> <p>Scientific Inquiry B-1 The student will demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions.</p>	6 Days	<p>Textbook /Study Guide Resources:</p> <ul style="list-style-type: none"> Biology McDougall Littell 9.4 Genetic Engineering, 9.5 Genomics and Bioinformatics, 9.6 Genetic Screening and Gene Therapy Modern Biology Holt, Rinehart and Winston 13.3 Genetic Engineering <p>Literacy Element</p> <ul style="list-style-type: none"> Genetic Engineering Concept Map <p>Instructional Activities</p> <ul style="list-style-type: none"> S3 Activities Activity B-4.9a - Stem Cell Research Flier Genetic Engineering http://www.cfaitc.org/lessonplans/pdf/412.pdf From Genes to Jeans http://www.cfaitc.org/lessonplans/pdf/407.pdf What Do You Think About Stem Cell Research? http://teach.genetics.utah.edu/content/tech/stemcells/What%20do%20you%20think.pdf Cloning http://learn.genetics.utah.edu/content/tech/cloning/ <p>Interactive Websites</p> <ul style="list-style-type: none"> Harvest of Fear http://www.pbs.org/wgbh/harvest/ Gene Therapy: Molecular Bandage? http://learn.genetics.utah.edu/content/tech/genetherapy/ DNA Extraction Virtual Lab http://learn.genetics.utah.edu/content/labs/extraction/ <p>Instructional Videos</p> <ul style="list-style-type: none"> The Power of Genes
ADMINISTER SCHOOL-BASED INTERIM ASSESSMENT			
ADMINISTER DISTRICT WINTER ASSESSMENT			

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FOURTH NINE WEEKS			
Lesson 1			
	<p>B-5.1 Summarize the process of natural selection.</p> <p>B-5.2 Explain how genetic processes result in the continuity of life-forms over time.</p> <p>B-5.3 Explain how diversity within a species increases the chances of its survival.</p> <p>B-5.4 Explain how genetic variability and environmental factors lead to biological evolution.</p> <p>Scientific Inquiry B-1 The student will demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions.</p>	6 Days	<p>Textbook /Study Guide Resources:</p> <ul style="list-style-type: none"> • Biology McDougall Littell 10.2 Darwin’s Observations, 10.3 Theory of Evolution, 10.4 Evidence of Evolution,10.5 Evolutionary Biology Today, 11.1 Genetic Variation Within Populations, 11.2 Natural Selection in Populations, 11.3 Other Mechanisms of Evolution, 11.4 Hardy-Weinberg , Equilibrium, 11.5 Speciation Through Isolation,11.6 Patterns in Evolution • Modern Biology Holt, Rinehart and Winston 15.1 History of Evolutionary Thought, 15.2 Evidence of Evolution, 15.3 Evolution in Action, 16.1 Genetic Equilibrium, 16.2 Disruption of Genetic Equilibrium, 16.3 Formation of Species <p>Literacy Element</p> <ul style="list-style-type: none"> • Natural Selection Concept Map • Genetic Variability Cause/Effect, Main Idea Graphic Organizers <p>Instructional Activities</p> <ul style="list-style-type: none"> • S3 Activities Activity B-5.1a – Quiz (Charles Darwin), Activity B-5.1b - Peppered Moth Simulation, Activity B-5.1c - Evolution Lab, Activity B-5.1d - Peppered Moth Simulation, Activity B-5.1e - Evolution Crossword, Activity B-5.1f - Review Guide • Dogs and More Dogs http://www.pbs.org/wgbh/nova/teachers/activities/3103_dogs.html • Genes, Variation and Human History http://www.genome.gov/25019893 • Teaching Hardy-Weinberg in the Classroom http://www.carolina.com/category/teacher+resources/classroom+activities/teaching+hardy+weinberg+in+the+classroom.do <p>Interactive Websites</p> <ul style="list-style-type: none"> • An introduction to evolution http://evolution.berkeley.edu/evolibrary/article/0_0_0/evo_02 • Evolution http://www.pbs.org/wgbh/evolution/ • Population Genetics and Evolution http://www.phschool.com/science/biology_place/labbench/lab8/intro.html • Hardy-Weinberg Conditions Animation http://zoology.okstate.edu/zoo_lrc/biol1114/tutorials/Flash/life4e_15-6-OSU.swf • Comic strip: Survival of the sneakiest http://evolution.berkeley.edu/evolibrary/search/lessonsummary.php?audience_level%5B3%5D=9-12&topic_id=&keywords=&type_id=&sort_by=audience_rank&Submit=Search&thisaudience=9-12&resource_id=100 <p>Instructional Videos (United Streaming)</p> <ul style="list-style-type: none"> • Icons of Science: Evolution • Biologix: The Hardy-Weinberg Principle
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Biology I
INSTRUCTIONAL PACING GUIDE
(DAYS BASED ON 90 MINUTE BLOCK)

DATES TAUGHT	INDICATORS	SUGGESTED PACING	RESOURCES
FOURTH NINE WEEKS (CONTINUED)			
Lesson 2			
	<p>B-5.5 Exemplify scientific evidence in the fields of anatomy, embryology, biochemistry, and paleontology that underlies the theory of biological evolution.</p> <p>B-5.6 Summarize ways that scientists use data from a variety of sources to investigate and critically analyze aspects of evolutionary theory.</p> <p>B-5.7 Use a phylogenetic tree to identify the evolutionary relationships among different groups of organisms.</p> <p>Scientific Inquiry B-1 The student will demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions.</p>	5 Days	<p>Textbook /Study Guide Resources</p> <ul style="list-style-type: none"> Biology McDougall Littell 12.1 Fossil Record , 12.2 The Geologic Time Scale, 12.3 Origin of Life, 12.4 Early Single-Celled Organisms, 12.5 Radiation of Multicellular Life, 12.6 Primate Evolution Modern Biology Holt, Rinehart and Winston 15.2 Systematics <p>Literacy Element</p> <ul style="list-style-type: none"> Various concept maps, main idea graphic organizers <p>Instructional Activities</p> <ul style="list-style-type: none"> S3 Activities Activity B-5.5a - Homologous Lab, Activity B-5.7a – Caminalcules, Activity B-5.7b - Cladogram Practice <p>Interactive Websites</p> <ul style="list-style-type: none"> Exploring Evolution WebLab http://www2.edc.org/weblabs/exploringevolution/evolution.swf What did T. Rex Taste Like? http://evolution.berkeley.edu/evolibrary/search/lessonsummary.php?audience_level%5B3%5D=9-12&topic_id=&keywords=&type_id=&sort_by=audience_rank&Submit=Search&thisaudience=9-12&resource_id=28
ADMINISTER SCHOOL-BASED INTERIM ASSESSMENT			
Lesson 3			
	<p>B-3.6 Illustrate the flow of energy through ecosystems (including food chains, food webs, energy pyramids, number pyramids, and biomass pyramids).</p> <p>Scientific Inquiry B-1 The student will demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions.</p>	5 Days	<p>Textbook /Study Guide Resources:</p> <ul style="list-style-type: none"> Biology McDougall Littell 13.3 Energy I Ecosystems, 13.4 Food Chains and Food Webs, 13.6 Pyramid Models Modern Biology Holt, Rinehart and Winston 18-3 Energy Transfer, 20.1 Species Interactions <p>Literacy Element</p> <ul style="list-style-type: none"> Food Chain Graphic Organizer http://www.science-class.net/Graphic_Organizers/GO_food_chains.pdf Transfer of Energy Graphic Organizer http://www.science-class.net/Graphic_Organizers/GO_energy_transfer.pdf Food Web Graphic Organizer http://www.exploringnature.org/graphics/graphic_organizers/Graphic_Org_food_webs.pdf Energy, Number, and Biomass Pyramids Compare/Contrast Food Chains and Food Webs Compare/Contrast Energy, Number, and Biomass Pyramids <p>Instructional Activities/ Interactive Websites</p> <ul style="list-style-type: none"> Ecological Pyramids http://www.nacee.org/pdfs/educators/ecological_pyramids.pdf Virtual Lab: Model Ecosystems http://www.mhhe.com/biosci/genbio/virtual_labs/BL_02/BL_02.html Create A Food Web http://www.vtaide.com/png/foodweb.htm Food Web http://teacher.scholastic.com/activities/explorer/ecosystems/be_an_explorer/map/line_experiment14.swf Feeding Relationships http://www.ngfl-cymru.org.uk/vtc/Phase3delivery/Wales/Science/Keystage4/Livingthingsand/Feedingrelation/Introduction/ <p>Instructional Videos</p> <ul style="list-style-type: none"> Food Chains and Webs

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DATES TAUGHT	INDICATORS	SUGGESTED PACING	RESOURCES
FOURTH NINE WEEKS (CONTINUED)			
	<p>B-6.1 Explain how the interrelationships among organisms (including predation, competition, parasitism, mutualism, and commensalism) generate stability within ecosystems</p> <p>B-6.2 Explain how populations are affected by limiting factors (including density-dependent, density-independent, abiotic, and biotic factors).</p> <p>Scientific Inquiry B-1 The student will demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions.</p>	6 Days	<p>Textbook /Study Guide Resources:</p> <ul style="list-style-type: none"> • Biology McDougall Littell 13.3 Energy in Ecosystems, 13.4 Food Chains and Food Webs, 14.1 Habitat and Niche, 14.2 Community Interactions, 14.3 Population Density and Distribution, 14.4 Population Growth Patterns, 15.1 Life in the Earth System, 15.2 Climate • Modern Biology Holt, Rinehart and Winston 18.2 Ecology of Organisms, 18.3 Energy Transfer, 19.1 Understanding Populations, 19.2 Measuring Populations, 20.1 Species Interactions, <p>Literacy Element</p> <ul style="list-style-type: none"> • Interrelationships Among Organisms Concept Map/Cause and Effect Graphic Organizer • Limiting Factors Concept Map/Cause and Effect Graphic Organizer <p>Instructional Activities/Interactive Websites</p> <ul style="list-style-type: none"> • NSTA Galapagos Classroom: Tortoise Tales http://www.nsta.org/publications/interactive/galapagos/activities/tortoise.html • Symbiotic Strategies http://www.pbs.org/wnet/nature/lessons/symbiotic-strategies/activities/1495/ • Limiting Factors of the Cedar Glade http://frank.mtsu.edu/~gladectr/teaching/21_Limiting%20Factors%20in%20the%20Glades.pdf • Limiting Factors http://www.gov.mb.ca/conservation/sustain/limfac.pdf <p>Instructional Videos</p> <ul style="list-style-type: none"> • Biologix: Interactions and Relationships among Organisms
	<p>B-6.3 Illustrate the processes of succession in ecosystems. Scientific Inquiry B-1 The student will demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions.</p>	3 Days	<p>Textbook /Study Guide Resources:</p> <ul style="list-style-type: none"> • Biology McDougall Littell 14.5 Ecological Succession • Modern Biology Holt, Rinehart and Winston 20.2 Patterns in Communities <p>Literacy Element</p> <ul style="list-style-type: none"> • Primary Succession Flowchart http://www.science-class.net/Graphic_Organizers/GO_Primary_Succession.pdf • Secondary Succession Flowchart • Compare/Contrast Primary and Secondary Succession <p>Instructional Activities/Interactive Websites</p> <ul style="list-style-type: none"> • Ecological Succession Internet Activity http://alrowlands.wikispaces.com/file/view/ecological_succession_internet_activity.pdf • Primary and Secondary Succession in America's Forests http://www.pbs.org/americanfieldguide/teachers/forests/forests_unit.html#2 <p>Instructional Videos</p> <ul style="list-style-type: none"> • Biologix: Succession and Climax Communities

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DATES TAUGHT	INDICATORS	SUGGESTED PACING	RESOURCES
FOURTH NINE WEEKS (CONTINUED)			
	<p>B-6.4 Exemplify the role of organisms in the geochemical cycles (including the cycles of carbon, nitrogen, and water).</p> <p>B-6.5 Explain how ecosystems maintain themselves through naturally occurring processes (including maintaining the quality of the atmosphere, generating soils, controlling the hydrologic cycle, disposing of wastes, and recycling nutrients).</p> <p>B-6.6 Explain how human activities (including population growth, technology, and consumption of resources) affect the physical and chemical cycles and processes of Earth.</p> <p>Scientific Inquiry B-1 The student will demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions.</p>	9 Days	<p>Textbook /Study Guide Resources:</p> <ul style="list-style-type: none"> • Biology McDougall Littell 13.5 Cycling of Matter, 16.1 Human Population Growth and Natural Resources, 16.2 Air Quality, 16.3 Air Quality, 16.4 Threats to Biodiversity, 16.5 Conservation • Modern Biology Holt, Rinehart and Winston 18-4 Ecosystem Recycling, 19.3 Human Population Growth, 20.2 Patterns In Communities, 22.1 An Interconnected Planet, 22.2 Environmental Issues, 22.3 Environmental Solutions <p>Literacy Element</p> <ul style="list-style-type: none"> • Main Idea Graphic Organizer – Role of Organisms in Geochemical Cycles, • Cause/Effect – Human Impact on the Environment • Sequencing/Flowchart – Interactions of Environmental Systems <p>Instructional Activities/Interactive Websites</p> <ul style="list-style-type: none"> • Geochemical Cycles (9-12) http://www.learningscience.org/esc3bgeochemicalcycles.htm • Biogeochemical Cycles Jigsaw Activity http://www.yayscienceclass.com/uploads/Pre-AP_Biology_Unit_05_-_Biogeochemical_Cycles_Activity_Part_1.pdf • Using The Carbon Cycle Interactive Game In the Classroom http://www.windows2universe.org/teacher_resources/teach_carbongame.html • Carbon Cycle-Kids Newsroom http://www.kidsnewsroom.org/climatechange/movies/carbon_cycle_version2.swf • Traveling Nitrogen http://www.windows2universe.org/teacher_resources/teach_nitrogen.html • Modeling the Water Cycle http://www.science-class.net/Lessons/Water%20Cycle/demo_w_c.pdf • POV Borders: Environment http://www.pbs.org/pov/borders/2004/educators/index.html • Changing Nature’s Course: A Look At the Kissimmee River http://www.nationalgeographic.com/xpeditions/lessons/14/g912/kissimmee.html • “The Lorax” – An Environmental Issue http://alex.state.al.us/lesson_view.php?id=23952 <p>Instructional Videos</p> <ul style="list-style-type: none"> • Elements of Biology: Ecosystems: Organisms and Their Environment
STANDARDS REVIEW IN PREPARATION FOR BIOLOGY I EOCEP			
ADMINISTER SCHOOL-BASED INTERIM ASSESSMENT			