Pacing Guide 2010-2011
Subject: Biology
Grade Level: 9-12

Grading Period: First through Fourth Quarters

Approximate Time for Teaching Standards	Standard	Core Instructional Materials	Strategic Supplementary Materials	Assessment	
				Mat'ls	District
	State Standard: Investigation and Experimentation	Textbook: Biology (Prentice Hall 2007) Biology (BSCS)			
3 days (8/9-8/11)	1f. Distinguish between hypothesis and theory as scientific terms.	Page Numbers 2-14	Reading & Study Workbook (Section 1.1 & 1.2)		
3 days (8/12-8/13, 8/16)	1j. Recognize the issues of statistical variability and the need for controlled tests.	8-14	Reading & Study Workbook (Section 1.2)		
	1n. Know that when an observation does not agree with an accepted scientific theory, the observation is sometimes mistaken or fraudulent (e.g., the Piltdown Man fossil or unidentified flying objects) and that the theory is sometimes wrong (e.g., the Ptolemaic model of the movement of the Sun, Moon, and planets).		Introduction to Graphical Analysis Population Density Investigation Sparrow Lab		

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				Mat'ls	District
3 days (8/17-8/19)		*15-22*	*Reading & Study Workbook (Section 1.3)* *Exploration: Using a Compound Microscope*		
2 days (8/20,8/23)	1a. Select and use appropriate tools and technology (such as computer-linked probes, spreadsheets, and graphing calculators) to perform tests, collect data, analyze relationships, and display data.	24-28	Reading & Study Workbook (Section 1.4)	Chapter 1 Exam	
2 days (8/24-8/25)		*35-39*	*Reading & Study Workbook (Section 2.1)* *Animated Biological Concepts DVDs: Atomic Structure, Energy Levels and Ionic Bonds*		
1 day (8/26)	1a. Select and use appropriate tools and technology (such as computer-linked probes, spreadsheets, and graphing calculators) to perform tests, collect data, analyze relationships, and display data.	*40-43*	*Reading & Study Workbook (Section 2.2)*		

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				Mat'ls	District
	State Standard : Cell Biology				
2 days (8/27,8/30)	1h. Students know most macromolecules (polysaccharides, nucleic acids, proteins, lipids) in cells and organisms are synthesized from a small collection of simple precursors.	44-48	Reading & Study Workbook (Section 2.3)		
	State Standard : Genetics				
	4e. Students know proteins can differ from one another in the number and sequence of amino acids.				
	State Standard : Cell Biology				
4 days (8/31-9/3)	1b. Students know enzymes are proteins that catalyze biochemical reactions without altering the reaction equilibrium and the activities of enzymes depend on the temperature, ionic conditions, and the pH of the surroundings.	49-53	Reading & Study Workbook (Section 2.4) Animated Biological Concepts DVD: Enzymatic Reactions Enzyme Activity Lab	Chapter 2 Exam	

Approximate Time for Teaching Standards	Standard	Core Instructional Materials	Strategic Supplementary Materials	Assessment	
				Mat'ls	District
1 days (9/7)		*63-65*	*Reading & Study Workbook (Section 3.1)*		
3 days (9/8-9/10)	State Standard : Ecology 6d. Students know how water, carbon, and nitrogen cycle between abiotic resources and organic matter in the ecosystem and how oxygen cycles through photosynthesis and respiration. 6e. Students know a vital part of an ecosystem is the stability of its producers and decomposers. 6f. Students know at each link in a food web some energy is stored in newly made structures but much energy is dissipated into the environment as heat. This dissipation may be represented in an energy pyramid.	67-73	*Inquiry Activity: How do organisms affect one another's survival?* Reading & Study Workbook (Section 3.2) Basics of Ecology DVD Energy Flow in Ecosystems		

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	State Standard : Ecology				
3 days (9/13- 9/15)	6d. Students know how water, carbon, and nitrogen cycle between abiotic resources and organic matter in the ecosystem and how oxygen cycles through photosynthesis and respiration.	74-80	Reading & Study Workbook (Section 3.3) Farming in the rye Basics of Ecology DVD Nutrient Cycles	Chapter 3 Exam	
2 days (9/16,9/17)		*87-89*	*Reading & Study Workbook (Section 4.1)*		
3 days (9/20-9/22)		*90-97*	*Reading & Study Workbook (Section 4.2)* *Basics of Ecology DVD* *Community Interaction* *Succession* *Analyzing Data: Ecosystem Productivity*		

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5 days (9/23,9/24,9/9/27-9/29)		*98-105*	*Reading & Study Workbook (Section 4.3)*	Biome Report	
3 days (9/29,9/30,10/1)		*106-112*	*Reading & Study Workbook (Section 4.4)*	Chapter 4 Exam	
	State Standard : Ecology				1st Quarter Benchmark
4 days (10/4-10-7)	6b. Students know how to analyze changes in an ecosystem resulting from changes in climate, human activity, introduction of nonnative species, or changes in population size. 6c. Students know how fluctuations in population size in an ecosystem are determined by the relative rates of birth, immigration, emigration, and death.	119-123	Reading & Study Workbook (Section 5.1) Population Trends Activity Reindeer Lab Population Analysis *Basics of Ecology DVD Populations*		
2 days (10/12,10/13)	6c. Students know how fluctuations in population size in an ecosystem are determined by the relative rates of birth, immigration, emigration, and death.	124-128	Reading & Study Workbook (Section 5.2)		
4 days (10/14,10/15,10/18, 10/19)	6c. Students know how fluctuations in population size in an ecosystem are determined by the relative rates of birth, immigration, emigration, and death.	129-132	Reading & Study Workbook (Section 5.3)	Population Growth Essay Ch 5 Exam	

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				Mat'ls	District
	State Standard : Ecology				
2 days (10/20,10/21)	6b. Students know how to analyze changes in an ecosystem resulting from changes in climate, human activity, introduction of nonnative species, or changes in population size.	139-143	Reading & Study Workbook (Section 6.1)		
2 days (10/22,10/25)	6b. Students know how to analyze changes in an ecosystem resulting from changes in climate, human activity, introduction of nonnative species, or changes in population size. 6a. Students know bio diversity is the sum total of different kinds of organisms and is affected by alterations of habitats.	144-149	Reading & Study Workbook (Section 6.2) Basics of Ecology DVD Human Impact Bioaccumulation Habitat Destruction		
3 day (10/26,10/28)	6b. Students know how to analyze changes in an ecosystem resulting from changes in climate, human activity, introduction of nonnative species, or changes in population size. 6a. Students know bio diversity is the sum total of different kinds of organisms and is affected by alterations of habitats.	150-156	Reading & Study Workbook (Section 6.3)		

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3day (10/29-11/2)	6b. Students know how to analyze changes in an ecosystem resulting from changes in climate, human activity, introduction of nonnative species, or changes in population size. State Standard : Cell Biology	157-160	Reading & Study Workbook (Section 6.4)	Chapter 6 Exam	
2 days (11/3,11/4)	1c. Students know how prokaryotic cells, eukaryotic cells (including those from plants and animals), and viruses differ in complexity and general structure. State Standard: Investigation and Experimentation 1k. Recognize the cumulative nature of scientific evidence. State Standard : Cell Biology	169-173	Reading & Study Workbook (Section 7.1) Basics of Biology DVD Cells: The Structure of Life		
3 days (11/5,11/8,11/9)	1c. Students know how prokaryotic cells, eukaryotic cells (including those from plants and animals), and viruses differ in complexity and general structure. 1e. Students know the role of the endoplasmic reticulum and Golgi apparatus in the secretion of proteins.	174-181	Reading & Study Workbook (Section 7.2) Plant and Animal Cell Sketches		

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				Mat'ls	District
	State Standard : Cell Biology				
4 days (11/10,11/12,11/15, 11/16)	1a. Students know cells are enclosed within semi permeable membranes that regulate their interaction with their surroundings.	182-189	Reading & Study Workbook (Section 7.3) Basics of Biology DVD Cell membranes Osmosis Lab		
2 days (11/17,11/18)		*190-193*	*Reading & Study Workbook (Section 7.4)*	Chapter 7 Exam	
	State Standard: Investigation and Experimentation				
2 days (11/19,11/22)	1k. Recognize the cumulative nature of scientific evidence.	*201-203*	*Reading & Study Workbook (Section 8.1)*		
2 days (11/23,11/24)		204-207	Reading & Study Workbook (Section 8.2)		
	State Standard : Cell Biology 1f. Students know usable energy is captured from sunlight by chloroplasts and is stored through the synthesis of sugar from carbon dioxide.				

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4 days (11/29-12/2)	State Standard : Cell Biology	208-214	Reading & Study Workbook (Section 8.3) Analyzing Data: Rates of Photosynthesis Animated Biological Concepts DVD: Light-Dependent Reactions and Calvin Cycle	Chapter 8 Exam	
2 days (12/3,12/6)	1g. Students know the role of the mitochondria in making stored chemical-bond energy available to cells by completing the breakdown of glucose to carbon dioxide.	221-225	Reading & Study Workbook (Section 9.1) Animated Biological Concepts DVD: Glycolysis, Aerobic Respiration, Krebs Cycle, and Electron Transport		
4 days (12/7-12/10)		*226-232*	*Reading & Study Workbook (Section 9.2)* *Animated Biological Concepts DVD: Aerobic Respiration, Krebs Cycle, and Electron Transport* *Photosynthesis and Respiration Lab*	Chapter 9 Exam	2nd Quarter Benchmark

Approximate Time for Teaching Standards	Standard	Core Instructional Materials	Strategic Supplementary Materials	Assessment	
				Mat'ls	District
5 days (1/6/,1/7,1/10-1/12)		*241-259*	*Reading & Study Workbook (Sections 10.1-10.3)* *Animated Biological Concepts DVD: Animal Cell Mitosis and Cytokinesis* *Microscope Lab: Mitosis* *Biodetective DVD: Skin Cancer, Deadly Cells*	Chapter 10 Exam	
	State Standard : Genetics				
2 days (1/13,1/14)	2d. Students know new combinations of alleles may be generated in a zygote through the fusion of male and female gametes (fertilization). 3b. Students know the genetic basis for Mendel's laws of segregation and independent assortment.	263-266	Reading & Study Workbook (Section 11.1) Animated Biological Concepts DVD: Segregation of Chromosomes		
	State Standard : Genetics				
2 days (1/18,1/19)	2g. Students know how to predict possible combinations of alleles in a zygote from the genetic makeup of the parents.	267-269	Reading & Study Workbook (Section 11.2)		

Approximate Time for Teaching Standards	Standard	Core Instructional Materials	Strategic Supplementary Materials	Assessment	
				Mat'ls	District
	3a. Students know how to predict the probable outcome of phenotypes in a genetic cross from the genotypes of the parents and mode of inheritance (autosomal or X-linked, dominant or recessive). 3b. Students know the genetic basis for Mendel's laws of segregation and independent assortment. State Standard : Genetics				
3 days (1/20,1/21,1/24)	2g. Students know how to predict possible combinations of alleles in a zygote from the genetic makeup of the parents. 3b. Students know the genetic basis for Mendel's laws of segregation and independent assortment. State Standard : Genetics	270-274	Reading & Study Workbook (Section 11.3) Multiple Alleles activity Genetics Practice Sheet		
2 days (1/25,1/26)	2a. Students know meiosis is an early step in sexual reproduction in which the pairs of chromosomes separate and segregate randomly during cell division to produce gametes containing one chromosome of each type.	275-278	Reading & Study Workbook (Section 11.4) Animated Biological Concepts DVD: Meiosis Overview, Animal Cell Meiosis, and Crossing Over		

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	State Standard : Genetics				
2 days (1/27,1/28)	3b. Students know the genetic basis for Mendel's laws of segregation and independent assortment.	279-280	Reading & Study Workbook (Section 11.5) Gene Mapping Activity	Chapter 11 Exam	
	State Standard : Genetics				
2 days (1/31,2/1)	5a. Students know the general structures and functions of DNA, RNA, and protein.	287-294	Reading & Study Workbook (Section 12.1) Animated Biological Concepts DVD: Griffith's Experiment and DNA Replication		
	State Standard : Genetics				
2 days (2/2,2/3)	5b Students know how to apply base-pairing rules to explain precise copying of DNA during semi conservative replication and transcription of information from DNA into mRNA.	295-299	Reading & Study Workbook (Section 12.2) BioMedia Video Replication		
	State Standard: Cell Biology				
3 days (2/4, 2/7,2/8)	1d. Students know the central dogma of molecular biology outlines the flow of information from transcription of ribonucleic acid (RNA) in the nucleus to translation of proteins on ribosomes in the cytoplasm.	300-306	Reading & Study Workbook (Section 12.3) Animated Biological Concepts DVD: DNA Transcription and Protein Synthesis		

Approximate Time for Teaching Standards	Standard	Core Instructional Materials	Strategic Supplementary Materials	Assessment	
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	State Standard: Genetics 4a. Students know the general pathway by which ribosomes synthesize proteins, using tRNAs to translate genetic information in mRNA. 4b. Students know how to apply the genetic coding rules to predict the sequence of amino acids from a sequence of codons in RNA. 5a. Students know the general structures and functions of DNA, RNA, and protein.		Transcription/Translation WS Reading & Study Workbook (Section 12.4)		
1day (2/9)	State Standard: Genetics 4c. Students know how mutations in the DNA sequence of a gene may or may not affect the expression of the gene or the sequence of amino acids in an encoded protein.	307-308	Animated Biological Concepts: Duplication and Deletion, Translocation and Inversion, and Point Mutations		
3 days (2/10,2/11,2/2/14)	State Standard: Genetics 4d. Students know specialization of cells in multi cellular organisms is usually due to different patterns of gene expression rather than to differences of the genes themselves.	309-312	Reading & Study Workbook (Section 12.5)	Chapter 12 Exam	

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1 days (2/15-2/17)	State Standard: Genetics 5c. Students know how genetic engineering (biotechnology) is used to produce novel biomedical and agricultural products.	319-321	Reading & Study Workbook (Section 13.1) Guest Speaker		
2 days (2/22,2/23)	5c. Students know how genetic engineering (biotechnology) is used to produce novel biomedical and agricultural products.	322-326	Reading & Study Workbook (Section 13.2)		
4 days (2/24,2/25,2/28,3/1)	5c. Students know how genetic engineering (biotechnology) is used to produce novel biomedical and agricultural products.	327-333	Reading & Study Workbook (Sections 13.3-13.4) Writing assignment: Genetically Modified Food	Chapter 13 Exam	
3 days (3/2-3/4)	State Standard: Genetics 2e. Students know why approximately half of an individual's DNA sequence comes from each parent.	341-348	Reading & Study Workbook (Section 14.1)		

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	2f. Students know the role of chromosomes in determining an individual's sex. 2g. Students know how to predict possible combinations of alleles in a zygote from the genetic makeup of the parents. 3a. Students know how to predict the probable outcome of phenotypes in a genetic cross from the genotypes of the parents and mode of inheritance (autosomal or X-linked, dominant or recessive).		Animated Biological Concepts: Sex Determination		
2 days (3/7,3/8)	2g. Students know how to predict possible combinations of alleles in a zygote from the genetic makeup of the parents. 3a. Students know how to predict the probable outcome of phenotypes in a genetic cross from the genotypes of the parents and mode of inheritance (autosomal or X-linked, dominant or recessive).	349-354	Reading & Study Workbook (Section 14.2) Biodetectives DVD: Coming Home: A Nation's Pledge Animated Biological Concepts: Nondisjunction		
3 days (3/9-3/11)		*355-360*	*Reading & Study Workbook (Section 14.3)* *Animated Biological Concepts: Gene Transfer and Cloning*	Chapter 14 Exam	3rd Quarter Benchmark

Approximate Time for Teaching Standards	Standard	Core Instructional Materials	Strategic Supplementary Materials	Assessment	
				Mat'ls	District
	State Standard: Evolution				
2 days (3/21-3/22)	7b. Students know why alleles that are lethal in a homozygous individual may be carried in a heterozygote and thus maintained in a gene pool.	369-372	Reading & Study Workbook (Section 15.1)		
2 days (3/23-3/24)	State Standard: Investigation and Experimentation 1f. Distinguish between hypothesis and theory as scientific terms. 1n. Know that when an observation does not agree with an accepted scientific theory, the observation is sometimes mistaken or fraudulent (e.g., the Piltdown Man fossil or unidentified flying objects) and that the theory is sometimes wrong (e.g., the Ptolemaic model of the movement of the Sun, Moon, and planets).	373-377	Reading & Study Workbook (Section 15.2)		
4 days (3/28-3/31)	State Standard: Evolution 7a. Students know why natural selection acts on the phenotype rather than the genotype of an organism.	378-386	Reading & Study Workbook (Section 15.3)		

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				Mat'ls	District
	7d. Students know variation within a species increases the likelihood that at least some members of a species will survive under changed environmental conditions. 8a. Students know how natural selection determines the differential survival of groups of organisms. 8b. Students know a great diversity of species increases the chance that at least some organisms survive major changes in the environment.			Chapter 15 Exam	
2 days (4/1,4/4)	7c. Students know new mutations are constantly being generated in a gene pool. 7d. Students know variation within a species increases the likelihood that at least some members of a species will survive under changed environmental conditions.	393-396	Reading & Study Workbook (Section 16.1) Selection Activity		
3 days (4/5-4/7)	7a. Students know why natural selection acts on the phenotype rather than the genotype of an organism. 8c. Students know the effects of genetic drift on the diversity of organisms in a population.	397-402	Reading & Study Workbook (Section 16.2) Hardy-Weinberg Equilibrium Worksheet		

Approximate Time for Teaching Standards	Standard	Core Instructional Materials	Strategic Supplementary Materials	Assessment	
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6 days (4/8-4/11-4/15)	8a. Students know how natural selection determines the differential survival of groups of organisms. 8b. Students know a great diversity of species increases the chance that at least some organisms survive major changes in the environment. 8d. Students know reproductive or geographic isolation affects speciation.	404-410	Reading & Study Workbook (Section 16.2) Biodetectives DVD: The Galapagos Islands: A Glimpse into the Past	Chapter 16 Exam	State Testing 4/11-4/15
3 days (4/18-4/20)	8e. Students know how to analyze fossil evidence with regard to biological diversity, episodic speciation, and mass extinction.	417-422	Reading & Study Workbook (Section 17.1) Isotope Decay Lab		
4 days (4/27-29,5/2)	8e. Students know how to analyze fossil evidence with regard to biological diversity, episodic speciation, and mass extinction.	423-434	Reading & Study Workbook (Sections 17.2 – 17.3)		
2days (5/3,5/4)	8e. Students know how to analyze fossil evidence with regard to biological diversity, episodic speciation, and mass extinction.	435-440	Reading & Study Workbook (Section 17.4)	Chapter 17 Exam	

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				Mat'ls	District
	State Standard: Physiology				
2 days (5/5,5/6)	9b. Students know how the nervous system mediates communication between different parts of the body and the body's interactions with the environment. 9c. Students know how feedback loops in the nervous and endocrine systems regulate conditions in the body. 9d. Students know the functions of the nervous system and the role of neurons in transmitting electrochemical impulses. 9e. Students know the roles of sensory neurons, interneurons, and motor neurons in sensation, thought, and response.	891-900	Reading & Study Workbook (Sections 35.1-35.2) Inquiry Activity: What are the organ systems? Animated Biological Concepts: Action Potential & Synaptic Transmission		
2 days (5/9,5/10)	9b. Students know how the nervous system mediates communication between different parts of the body and the body's interactions with the environment. 9e. Students know the roles of sensory neurons, interneurons, and motor neurons in sensation, thought, and response.	901-904	Reading & Study Workbook (Section 36.2)		

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				Mat'ls	District
2 days (5/11,5/12)	9h. Students know the cellular and molecular basis of muscle contraction, including the roles of actin, myosin, Ca and ATP	926-931	Animated Biological Concepts: Muscle Contraction		
1day (5/13)	10a. Students know the role of the skin in providing nonspecific defenses against infection. 9b. Students know how the nervous system mediates communication between different parts of the body and the body's interactions with the environment.	932-936	Reading & Study Workbook (Section 36.3)		
3days (5/16-5/18)		951-963		Anatomy Exam	