

**MIAMI-DADE COUNTY PUBLIC SCHOOLS
DISTRICT PACING GUIDE**

YEAR-AT-A-GLANCE

BIOLOGY I HONORS		COURSE CODE: 200032001	
1ST Nine Weeks	2ND Nine Weeks	3RD Nine Weeks	4TH Nine Weeks
<p>I. Introduction to Biology/Nature of Life A. The Process of Science B. Introduction to Biology</p> <p>II. Building Blocks of Life (Carbon, Hydrogen, Oxygen, Nitrogen) A. Survey of the Periodic Table B. Chemical Bonds C. Chemical Reactions D. Biogeochemical Compounds E. Enzymes</p> <p>III. Biogeochemical Cycles A. Types of Biogeochemical Cycles B. Processes Related to Cycles C. Human Impact on the Cycles</p> <p>IV. Ecosystems and Energy Flow A. Conservation of Matter and Energy B. Food Chains and Food Webs C. Types of Pyramids D. Organism Interactions</p> <p>V. Introduction to Biomes and Succession in an Ecosystem A. Biomes B. Succession</p> <p>VI. Population Ecology A. Population Growth Curves B. Human Population Dynamics C. Human Environmental Impacts</p> <p>VII. Cell Structure and Function A. Levels of Organization B. The Cell Theory C. Cell Structures and Function D. Discussion of Division of Labor and Specialized Cells E. Comparison of Plant and Animal Cells</p> <p align="center"><i>REVIEW OF BIOLOGY EOC AA BENCHMARKS From 1st nine weeks</i></p>	<p>VIII. Photosynthesis A. Plant Structures and Function B. ATP Formation C. General Equation for Photosynthesis D. Light-dependent Reactions E. Light-independent Reactions F. Factors Affecting Photosynthesis</p> <p>IX. Cellular Respiration A. General Equation for Cellular Respiration B. Stages</p> <p>X. Cell Cycle and Mitosis A. Cell Cycle B. Mitosis (Nuclear Division) C. Cytokinesis (Cytoplasmic Division) D. Comparison of Plant and Animal Mitosis</p> <p>XI. Meiosis A. Meiosis B. Genetic Variation Resulting From Meiosis C. Comparison of Mitosis and Meiosis</p> <p>XII. Heredity - Mendelian Genetics A. Mendel's Experiments B. Probability and Punnett Squares C. Chromosome Theory of Inheritance D. Patterns of Inheritance E. Linked Genes and Crossing Over</p> <p>XIII. Genetic Diseases and Human Genetics A. DNA and the Human Genome Project B. Causes of Genetic Diseases C. Chromosomal Disorders D. Sex-Linked Genes E. Examining Human Chromosomes & Traits</p> <p align="center"><i>REVIEW OF BIOLOGY EOC AA BENCHMARKS From 2nd nine weeks</i></p>	<p>XIV. DNA, Replication and Transcription A. Experiments and History B. Structure of DNA & Chromosomes C. DNA Replication D. Transcription</p> <p>XV. RNA and Protein Synthesis A. RNA Structure and Review of Transcription B. Types of RNA (Structure & Function) C. Translation D. "One Gene – One Enzyme" E. Mutations</p> <p>XVI. Genetic Engineering A. Experiments/Contributions B. Forms of Biotechnology C. Regulation of Genes (Prokaryotes) D. Bio Ethical Issues E. Careers in Genetic Engineering</p> <p>XVII. Theory of Evolution A. Theories on the Origins of Life B. First Organic Molecules C. Ideas That Shaped Darwin's Thinking D. Darwin's Theory of Evolution by Natural Selection E. Evolution of Populations (Microevolution)</p> <p>XVIII. Evidence of the Theory of Evolution and Taxonomy A. Evidence for the Theory of Evolution B. Macroevolution C. Hominid Evolution D. Taxonomy</p> <p align="center"><i>REVIEW OF BIOLOGY EOC AA BENCHMARKS From 3rd nine weeks</i></p>	<p>XIX. Human Body Systems A. Integumentary System B. Skeletal System C. Muscular System D. Circulatory and Respiratory Systems E. Digestive and Excretory Systems F. Nervous Systems G. Survey of Endocrine and Reproductive Systems H. Immune System</p> <p align="center"><i>BIOLOGY EOC AA BENCHMARKS CRUNCH TIME (2 weeks)</i></p> <p>XX. Prokaryotes, Viruses, Protists and Fungi A. Prokaryotes B. Viruses C. Protists D. Fungi</p> <p>XXI. Study of Animal Diversity and Adaptations of the Invertebrate Phylum A. Invertebrate Diversity B. Integration of Human Body Systems with Invertebrates and Chordates</p> <p>XXII. Study of Animal Diversity and Adaptations of the Chordate Phylum A. Chordate Diversity B. Integration of Human Body Systems with Invertebrates and Chordates</p> <p>XXIII. Survey of Plant Diversity A. Non-vascular Plants (Diversity and Reproduction) B. Vascular Plants (Diversity and Modes of Reproduction) C. Importance of Plants</p>

MIAMI-DADE COUNTY PUBLIC SCHOOLS
District Pacing Guide

BIOLOGY I HONORS

Course Code: 200032001

BODY OF KNOWLEDGE: L: Life Science – N: Nature of Science – LA: Language Arts – S: Statistics

	Pacing	Date(s)
Traditional	4 days	08-22-11 to 08-25-11
Block	2 days	08-22-11 to 08-25-11

TOPIC I: Introduction to Biology/ Nature of Life

NEXT GENERATION SUNSHINE STATE STANDARD(S)	ESSENTIAL CONTENT	OBJECTIVES	INSTRUCTIONAL TOOLS
<p>Standard 14: Organization and Development of Living Organisms SC.912.L.14.4</p> <p>Standard 1: The Practice of Science SC.912.N.1.1 SC.912.N.1.2 SC.912.N.1.3 SC.912.N.1.4 SC.912.N.1.6 SC.912.N.1.7</p> <p>Standard 2: The Characteristics of Scientific Knowledge SC.912.N.2.1 SC.912.N.2.2 SC.912.N.2.4</p> <p>Standard 3: The Role of Theories, Laws, Hypotheses and Models SC.912.N.3.1 SC.912.N.3.4</p> <p>Standard 2: Nonfiction LA.910.2.2.3</p> <p>Standard 1: Formulating Questions MA.912.S.1.2</p> <p>Standard 3: Summarizing Data (Descriptive Statistics) MA.912.S.3.2</p> <p>Math and Language Arts benchmarks should be integrated within appropriate topics throughout the year.</p>	<p>A. The Process of Science</p> <ol style="list-style-type: none"> 1. Inquiry and observation 2. Hypothesis based science 3. Understanding science inquiry 4. Safety Procedures 5. Lab equipment and their uses 6. Accurate metric measurements <p>B. Introduction to Biology</p> <ol style="list-style-type: none"> 1. What is Biology 2. Diversity in Biology 3. The themes of Biology 4. Careers in Biology 5. Characteristics of living things 6. Levels of organization 	<ul style="list-style-type: none"> • Describe how scientists test hypotheses. • Practice accepted safety procedures using appropriate science equipment for all science activities. • Identify appropriate safety procedures for typical laboratory emergencies such as: broken glass, chemical spills, chemical splashes on the skin or in the eye, and the prevention of fires. • Select proper attire (aprons, eye protection, containment of hair, clothes) to ensure personal protection for all science activities. • Identify the parts, functions, proper care and use of appropriate scientific equipment. • Demonstrate accurate metric measurement by reading common laboratory instruments to the nearest unit of measure and describe the uncertainty of these measures. • Explain the goal of science, specifically the study of Biology. • Identify the major themes of Biology. • Describe the characteristics of living things. • Explore research and career opportunities in the field of biology. 	<p>Core Text Book: Prentice Hall Biology Exploring Life, Campbell Chapters 1 & 2</p> <p>Vocabulary: (see p.2) Biology, Organism, Science,</p> <p>Technology: (see p.2) 1. Importance of Biology. Visit: PHSchool.com Code: cbe-1011</p> <p>Strategies: (see p.2)</p> <ul style="list-style-type: none"> ○ ELL: ○ Enrichment: ○ SPED: <p>Assessment: (see p.2) 1. Formal and authentic 2. Lab reports</p> <p>Labs: (see p.2) 1. Laboratory Safety and Contract (HSL) 2. Fun with Bubbles (HSL) 3. Peanut Observation (AP)</p> <p>Related Program: NA</p>

MIAMI-DADE COUNTY PUBLIC SCHOOLS
District Pacing Guide

BIOLOGY I HONORS

Course Code: 200032001

BODY OF KNOWLEDGE: P: Physical Science – L: Life Science

TOPIC II: Building Blocks of Life (Carbon, Hydrogen, Oxygen and Nitrogen)

	Pacing	Date(s)
Traditional	10 days	08-26-11 to 09-09-11
Block	5 days	08-26-11 to 09-09-11

NEXT GENERATION SUNSHINE STATE STANDARD(S)	ESSENTIAL CONTENT	OBJECTIVES	INSTRUCTIONAL TOOLS
<p>Standard 8: Matter SC.912.P.8.5 SC.912.P.8.6 SC.912.P.8.7 SC.912.P.8.12</p> <p>Standard 10: Energy SC.912.P.10.1</p> <p>Standard 18: Matter and Energy Transformations SC.912.L.18.1 SC.912.L.18.2 SC.912.L.18.3 SC.912.L.18.4 SC.912.L.18.7 SC.912.L.18.8 SC.912.L.18.9 SC.912.L.18.10 SC.912.L.18.11 SC.912.L.18.12</p>	<p>A. Survey of the Periodic Table</p> <ol style="list-style-type: none"> Symbols (related to Biology) Atomic number and atomic mass Period and group Elements exist as isotopes <p>B. Chemical Bonds</p> <ol style="list-style-type: none"> Ionic Covalent (including Hydrogen bonding) <p>C. Chemical Reactions</p> <ol style="list-style-type: none"> Chemical formula Reactions and products Equations for photosynthesis and cellular respiration Rates of reactions Roles of enzymes <p>D. Biogeochemical Compounds</p> <ol style="list-style-type: none"> Carbohydrates Lipids Proteins Nucleic Acids <p>E. Enzymes</p> <ol style="list-style-type: none"> Activation energy Lock and key model Role as a catalyst pH and temperature 	<ul style="list-style-type: none"> Identify the most common elements in living things and recognize elements from compounds. Describe the structure of atoms and explain how isotopes can be used to study biological processes. Differentiate between ionic and covalent bonds. Describe and illustrate different ways in which molecules are represented. Synthesize what occurs in a chemical reaction. Recognize and identify the parts of a reaction using the equations for photosynthesis and cellular respiration (e.g., reactants and products) Apply the concept of a water molecule structure to explain water's unique properties. Compare acids and bases. Draw conclusions on how Earth's conditions are fit for life. Identify the four major classes of biochemical compounds important to biological structures and metabolism, their common monomers, and their major role(s) in the cell. Explain why enzymes are important to living things. Analyze the effects of pH and temperature on the rate of an enzyme-catalyzed reaction. 	<p>Core Text Book: Chapters 4 and 5</p> <p>Vocabulary: (see p.2) Atomic Number, Mass number, Element,</p> <p>Technology: (see p.2)</p> <ol style="list-style-type: none"> <i>Discover the Composition of Familiar Items –OA</i> <i>Examine Carbon based Molecules – OA</i> <p>Strategies: (see p.2)</p> <ul style="list-style-type: none"> ELL: Enrichment: SPED: <p>Assessment: (see p.2)</p> <ol style="list-style-type: none"> Formal and authentic Lab reports Use Molecular Models to build Carbon compounds <p>Labs: (see p.2)</p> <ol style="list-style-type: none"> Properties of Water (HSL) Identifying Organic Compounds. (HSL) Enzyme Catalyst Lab (HSL) Enzyme Kinetics. (AP) Use molecular models to build carbon compounds <i>Explore Parts of an Atom –OA</i> <p>Related Program: NA</p>

MIAMI-DADE COUNTY PUBLIC SCHOOLS
District Pacing Guide

BIOLOGY I HONORS

Course Code: 200032001

BODY OF KNOWLEDGE: E: Earth and Space Science – L: Life Science

TOPIC III: Biogeochemical Cycles

Pacing		Date(s)
Traditional	4 days	09-12-11 to 09-15-11
Block	2 days	09-12-11 to 09-15-11

NEXT GENERATION SUNSHINE STATE STANDARDS	ESSENTIAL CONTENT	OBJECTIVES	INSTRUCTIONAL TOOLS
<p>Standard 7: Earth Systems and Patterns SC.912.E.7.1 SC.912.E.7.3</p> <p>Standard 17: Interdependence SC.912.L.17.10 SC.912.L.17.11 SC.912.L.17.16 SC.912.L.17. 20</p>	<p>A. Types of Biogeochemical Cycles</p> <ol style="list-style-type: none"> 1. Water 2. Carbon 3. Nitrogen <p>B. Processes Related to Cycles (e.g. carbon cycle includes photosynthesis)</p> <p>C. Human Impact on the Cycles</p> <ol style="list-style-type: none"> 1. Global warming 2. Ozone depletion 3. Pollution and contamination 	<ul style="list-style-type: none"> • Describe the carbon, nitrogen, and water cycles and their relationship to the maintenance of life. • Describe how the interdependence of organisms in an ecosystem results in a relatively stable system that cycles around a state of equilibrium. • Analyze the effects of global warming on ecosystems. • Explain the importance of ozone. • List ways in which certain types of pollution affect health and life span, the extinction of other animal and plant species, and the accelerated change to the environment leading to habitat loss or the creation of new habitats. • Distinguish between the Greenhouse effect and Global warming. 	<p>Core Text Book: Ch.36 (36.3-36.4)</p> <p>Vocabulary: (see p.2) Biogeochemical cycle, Nitrogen cycle, Nitrogen fixation, Nitrification, Transpiration, Condensation, Water/Hydrologic cycle,</p> <p>Technology:</p> <ol style="list-style-type: none"> 1. Cycles of Matter & Water Cycle Activity www.SciLinks.org Code: cbn-2033 2. Acid Rain Quest –WQ 3. PizzaQuest –WQ 4. Examine the Nitrogen Cycle -OA 5. Analyze the Effects of Deforestation -OA <p>Strategies: (see p.2)</p> <ul style="list-style-type: none"> o ELL: o Enrichment: o SPED: <p>Assessment: (see p.2)</p> <ol style="list-style-type: none"> 1. Formal and authentic 2. Lab reports <p>Labs: (see p.2)</p> <ol style="list-style-type: none"> 1. Human Impact – Effects of Acid Rain (HSL) <p>Related Program: NA</p>

MIAMI-DADE COUNTY PUBLIC SCHOOLS
District Pacing Guide

BIOLOGY I HONORS

Course Code: 200032001

BODY OF KNOWLEDGE: P: Physical Science – L: Life Science

TOPIC IV: Ecosystems and Energy Flow

	Pacing	Date(s)
Traditional	10 Days	9-16-11 to 09-30-11
Block	5 Days	9-16-11 to 09-30-11

NEXT GENERATION SUNSHINE STATE STANDARD(S)	ESSENTIAL CONTENT	OBJECTIVES	INSTRUCTIONAL TOOLS
<p>Standard 10: Energy SC.912.P.10.1 SC.912.P.10.2 SC.912.P.10.8</p> <p>Standard 17: Interdependence SC.912.L.17.4 SC.912.L.17.5 SC.912.L.17.6 SC.912.L.17.7 SC.912.L.17.8 SC.912.L.17.9 SC.912.L.17.16 SC.912.L.17.20</p>	<p>A. Conservation of Matter and Energy</p> <ol style="list-style-type: none"> 1. Matter & Energy (1st Law) 2. Energy is transferred to a less useful form, such as heat <p>B. Food Chains and Food Webs</p> <ol style="list-style-type: none"> 1. Energy usage and Transfer 2. Types of organisms (Producers, Consumers, and Decomposers) 4. Biological magnification <p>C. Types of Pyramids (Energy, Biomass, and Numbers)</p> <p>D. Organism Interactions</p> <ol style="list-style-type: none"> 1. Predator/Prey 2. Symbiosis (Mutualism, Parasitism, and Commensalism) 3. Coevolution 	<ul style="list-style-type: none"> • Describe how the interdependence of organisms in an ecosystem results in a relatively stable system that cycle around a state of equilibrium. • Construct and compare food chains and food webs. • Describe environmental; problem such as; pollution, biological magnification of toxic substances facing South Florida, and generate possible solutions. • Identify current problems caused by applied technology and economic pressures that might be solved by the application of biological knowledge, e.g. pesticides in the environment, genetic engineering, management of public lands and resources, and deforestation. • Explain the ecological interactions demonstrated by symbiosis (mutualism, commensalisms, parasitism, competition, and predation). • Distinguish between pyramids of energy, biomass, and numbers. 	<p>Core Text Book: Ch.36 (36.1, 36.2, 36.4, 36.5) and Ch. 35</p> <p>Vocabulary: (see p.2) Biological magnification, Biodiversity,</p> <p>Technology: (see p.2) 1. www.SciLinks.org Code: cbn-2032 2. Florida Lake Quest – WQ</p> <p>Strategies: (see p.2)</p> <ul style="list-style-type: none"> ○ ELL: ○ Enrichment: ○ SPED: <p>Assessment: (see p.2)</p> <ol style="list-style-type: none"> 1. Formal and authentic 2. Lab reports <p>Labs: (see p.2)</p> <ol style="list-style-type: none"> 1. Study of Abiotic & Biotic Factors (HSL) 2. Designing Food Chains & Food Webs (HSL) <p>Related Program: NA</p>

**MIAMI-DADE COUNTY PUBLIC SCHOOLS
District Pacing Guide**

BIOLOGY I HONORS

Course Code: 200032001

BODY OF KNOWLEDGE: E: Earth and Space Science – L: Life Science

	Pacing	Date(s)
Traditional	2 Days	10-03-11 to 10-04-11
Block	1 Days	10-03-11 to 10-04-11

TOPIC V: Introduction to Biomes and Succession in an Ecosystem

NEXT GENERATION SUNSHINE STATE STANDARDS	ESSENTIAL CONTENT	OBJECTIVES	INSTRUCTIONAL TOOLS
<p>Standard 7: Earth Systems and Patterns SC.912.E.7.4</p> <p>Standard 17: Interdependence SC.912.L.17.2 SC.912.L.17.4 SC.912.L.17.7 SC.912.L.17.8</p>	<p>A. Biomes</p> <ol style="list-style-type: none"> Types (Terrestrial and Aquatic) Characteristics (Biotic and Abiotic Factors) <p>B. Succession</p> <ol style="list-style-type: none"> Primary Secondary 	<ul style="list-style-type: none"> Identify the biotic and abiotic components of an ecosystem and the importance of each in determining the organisms found in South Florida or other regions (biomes). Identify the different marine/ocean zones and relate the abiotic factors (chemistry, geography, light, depth, salinity, and temperature) that influence the organisms. Identify current problems caused by applied technology and economic pressures that might be solved by the application of biological knowledge, e.g. pesticides in the environment, genetic engineering, management of public lands and resources, and deforestation Describe and differentiate between primary and secondary succession Distinguish among descriptive (Laboratory and field observations) comparative (comparing two experiments with one common manipulated variable) and experimental (controlled experiment) investigation designs commonly used in the biological science. 	<p>Core Text Book: Chapter 34</p> <p>Vocabulary: Biome, Abiotic factor, Biotic factor, Succession, Weather, Climate, Niche</p> <p>Technology: (see p.2) 1. Chesapeake Bay Quest - WQ</p> <p>Strategies: (see p.2)</p> <ul style="list-style-type: none"> ELL: Enrichment: SPED: <p>Assessment: (see p.2) 1. Lab reports 2. Formal and authentic</p> <p>Labs: (see p.2) 1. Life As A Pond Organism – LM 2. Measuring Abiotic Factors Hands-on Activity –TE 3. Biome Vocabulary Bingo Game –TE</p> <p>Related Program: NA</p>

MIAMI-DADE COUNTY PUBLIC SCHOOLS
District Pacing Guide

BIOLOGY I HONORS

Course Code: 200032001

BODY OF KNOWLEDGE: L: Life Science – HE: Health Education

	Pacing	Date(s)
Traditional	4 Days	10-05-11 to 10-10-11
Block	2 Days	10-05-11 to 10-10-11

TOPIC VI: Population Ecology

NEXT GENERATION SUNSHINE STATE STANDARDS	ESSENTIAL CONTENT	OBJECTIVES	INSTRUCTIONAL TOOLS
<p>Standard 17: Interdependence SC.912.L.17.1 SC.912.L.17.5 SC.912.L.17.6 SC.912.L.17.8 SC.912.L.17.11 SC.912.L.17.12 SC.912.L.17.13 SC.912.L.17.14 SC.912.L.17.15 SC.912.L.17.16 SC.912.L.17.17 SC.912.L.17.18 SC.912.L.17.19 SC.912.L.17.20</p> <p>Standard 1: Concepts HE.912.C.1.3</p>	<p>A. Population Growth</p> <ol style="list-style-type: none"> 1. Carrying capacity 2. Types of growth (Exponential and Logistic) 3. Limits to population growth (Density-dependent, Density-independent factors, and Cycles, e.g. snowshoe hare and lynx) 4. Principle of Competitive Exclusion <p>B. Human Population Dynamics</p> <ol style="list-style-type: none"> 1. Age Structure Graphs 2. Birth rate/death rate 3. Developed and Developing countries <p>C. Human Environmental Impacts</p> <ol style="list-style-type: none"> 1. Deforestation 2. Non-native/Invasive species 3. Loss of biodiversity 4. Types of resources (renewable and non-renewable) 	<ul style="list-style-type: none"> • Explain the role of limiting factors with respect to carrying capacity, using human population growth and quality of life as examples. • Identify two types of growth curves: exponential and logistic. • Identify examples of density-dependent and density-independent factors. • Recognize “boom-and-bust” cycles. • Recognize that two similar species may each thrive in separate locations, but one may exclude the other when they are placed together. • Identify current problems caused by applied technology and economic pressures that might be solved by the application of biological knowledge, e.g. pesticides in the environment, genetic engineering, management of public lands and resources, and deforestation. • List ways in which certain types of pollution affect health and life span, the extinction of other animal and plant species, and the accelerated change to the environment leading to habitat loss or the creation of new habitats. 	<p>Core Text Book: Ch 35, Ch 36 (36.5)</p> <p>Vocabulary: (see p.2) Carrying capacity, Demographics, Age structure graph, Developed country, Developing country, Exponential growth curve, Logistic growth curve,</p> <p>Technology: (see p.2)</p> <ol style="list-style-type: none"> 1. Killer Bee Quest –WQ 2. Links on Population Growth www.SciLinks.org Code: cbn-2053 <p>Strategies: (see p.2)</p> <ul style="list-style-type: none"> ○ ELL: ○ Enrichment: ○ SPED: <p>Assessment: (see p.2)</p> <ol style="list-style-type: none"> 1. Formal and authentic 2. Lab reports <p>Labs: (see p.2)</p> <ol style="list-style-type: none"> 1. Limiting Factors (HSL) <p>Related Program: NA</p>

MIAMI-DADE COUNTY PUBLIC SCHOOLS
District Pacing Guide

BIOLOGY I HONORS

Course Code: 200032001

BODY OF KNOWLEDGE: L: Life Science

TOPIC VII: Cell Structure and Function

	Pacing	Date(s)
Traditional	13 Days	10-11-11 to 10-27-11
Block	6 Days	10-11-11 to 10-27-11

NEXT GENERATION SUNSHINE STATE STANDARDS	ESSENTIAL CONTENT	OBJECTIVES	INSTRUCTIONAL TOOLS
<p>Standard 14: Organization and Development of Living Organisms SC.912.L.14.1 SC.912.L.14.2 SC.912.L.14.3 SC.912.L.14.4 SC.912.L.14.5</p> <p>Standard 18: Matter and Energy Transformations SC.912.L.18.1 SC.912.L.18.2 SC.912.L.18.3 SC.912.L.18.4</p>	<p>A. Levels of Organization</p> <p>B. The Cell Theory 1. Prokaryote 2. Eukaryote 3. History (microscopes and scientists)</p> <p>C. Cell Structures and Functions 1. Cell Membrane i. Diffusion ii. Osmosis iii. Facilitated diffusion iv. Active transport 2. Nucleus (DNA, RNA, chromosome) 3. Other organelles (cytoplasm, nuclear membrane, ribosome, mitochondrion, chloroplast, lysosome, vacuole, endoplasmic reticulum, Golgi apparatus, cell wall, centrioles, microtubules, flagella, cilia)</p> <p>D. Discussion of Division of Labor and Specialized Cells</p> <p>E. Comparison of Plant and Animal Cells</p>	<ul style="list-style-type: none"> • Describe the processes that move molecules in living systems and their importance: diffusion, osmosis, and active transport. Include the direction of movement, types of substances moved, and energy that drives each process. • Locate, identify the functions of, and describe how the following cell organelles or areas are adapted to carry out processes needed by the cell: nucleus, cytoplasm, cell membrane, nuclear membrane, chromosome, ribosome, mitochondrion, plastid, lysosomes, vacuoles, endoplasmic reticulum, Golgi apparatus and cell wall. • Recognize the chemical composition of the cell membrane and understand its function as a site for chemical synthesis and energy conversions (Na-K pump). • Describe the division of labor among cells and explain how it permits a higher degree of specialization among multicellular organisms. • List differences and similarities between a plant and animal cell. 	<p>Core Text Book: Ch. 6</p> <p>Vocabulary: (see p.2) Cell Theory, Prokaryote, Eukaryote, Organelles, Cell Membrane, Selectively Permeable,</p> <p>Technology: (see p.2) 1. Cell Quest -WQ</p> <p>Strategies: (see p.2) ○ ELL: ○ Enrichment: ○ SPED:</p> <p>Assessment: (see p.2) 1. Formal and authentic 2. Lab reports</p> <p>Labs: (see p.2) 1. Cell Model Project (HSL) 2. Diffusion and Osmosis (HSL) 3. Cells-Potato Osmosis (EL)</p> <p>Related Program: NA</p>

MIAMI-DADE COUNTY PUBLIC SCHOOLS
District Pacing Guide

BIOLOGY I HONORS

Course Code: 200032001

BODY OF KNOWLEDGE: P: Physical Science- L: Life Science

TOPIC VIII: Photosynthesis

Pacing		Date(s)
Traditional	10 Days	10-31-11 to 11-14-11
Block	5 Days	10-31-11 to 11-14-11

NEXT GENERATION SUNSHINE STATE STANDARDS	ESSENTIAL CONTENT	OBJECTIVES	INSTRUCTIONAL TOOLS
<p>Standard 8: Matter SC.912.P.8.7</p> <p>Standard 14: Organization and Development of Living Organisms SC.912.L.14.7</p> <p>Standard 18: Matter and Energy Transformations. SC.912.L.18.1 SC.912.L.18.2 SC.912.L.18.3 SC.912.L.18.4 SC.912.L.18.5 SC.912.L.18.7 SC.912.L.18.9 SC.912.L.18.10</p>	<p>A. Plant Structures and Function</p> <ol style="list-style-type: none"> 1. Leaves 2. Stems 3. Roots <p>B. ATP Formation</p> <ol style="list-style-type: none"> 1. Chemical potential energy 2. ATP-ADP Cycle <p>C. General Equation for Photosynthesis</p> <p>D. Light-dependent Reactions (Photolysis of Water using light energy)</p> <ol style="list-style-type: none"> 1. Reactants and Products 2. Location (thylakoids and photosystems/chlorophyll) 3. Role of NADPH 4. ATP Production <p>E. Light-independent Reactions (Calvin Cycle)</p> <ol style="list-style-type: none"> 1. Reactants and Products 2. Location (stroma) <p>F. Factors affecting photosynthesis</p> <ol style="list-style-type: none"> 1. Carbon dioxide uptake 2. pH 3. Temperature 	<ul style="list-style-type: none"> • Identify the major plant organs and tissues. • Describe the structures and functions of roots, stems, flowers, leaves, fruits, seeds. • Discuss the functions of the various types of tissues and organs of plants. • Describe how the ATP-ADP cycle powers the anabolic and catabolic reactions and its role in cellular processes such as photosynthesis and respiration. • State the overall equation for photosynthesis. • Describe the basic process of photosynthesis and its importance in energy and chemical cycles, including the following: raw materials, forms of energy used and produced chemical products, the role of chlorophyll, and the location of the process. • Identify factors that affect the rate at which photosynthesis occurs. 	<p>Core Text Book: Ch. 7, (7.1-7.3) and Chapter 8</p> <p>Vocabulary: (see p.2) Photosynthesis, Pigment, Chlorophyll, Autotroph, Light-dependent reactions,</p> <p>Technology: (see p.2) 1. www.SciLinks.org Calvin Cycle (cbn-3082) Photosynthesis (cbn-3083)</p> <p>Strategies: (see p.2)</p> <ul style="list-style-type: none"> ○ ELL: ○ Enrichment: ○ SPED: <p>Assessment: (see p.2) 1. Formal and authentic 2. Lab reports</p> <p>Labs: (see p.2) 1. Investigating the Effect of Light Intensity on Photosynthesis (HSL)</p> <p>Related Program: NA</p>

MIAMI-DADE COUNTY PUBLIC SCHOOLS
District Pacing Guide

BIOLOGY I HONORS

Course Code: 200032001

BODY OF KNOWLEDGE: L: Life Science

TOPIC IX: Cellular Respiration

Pacing		Date(s)
Traditional	6 Days	11-15-11 to 11-22-11
Block	3 Days	11-15-11 to 11-22-11

NEXT GENERATION SUNSHINE STATE STANDARDS	ESSENTIAL CONTENT	OBJECTIVES	INSTRUCTIONAL TOOLS
<p>Standard 14: Organization and Development of Living Organisms SC.912.L.14.2 SC.912.L.14.36</p> <p>Standard 18: Matter and Energy Transformations SC.912.L.18.1 SC.912.L.18.2 SC.912.L.18.3 SC.912.L.18.4 SC.912.L.18.5 SC.912.L.18.6 SC.912.L.18.8 SC.912.L.18.9 SC.912.L.18.10</p>	<p>A. General Equation for Cellular Respiration</p> <p>B. Stages</p> <ol style="list-style-type: none"> 1. Glycolysis & Fermentation (Anaerobic Respiration) <ol style="list-style-type: none"> a. Reactants and Products b. Location (cytoplasm) c. Role of NADH d. Net yield of ATP e. Lactic acid and alcoholic fermentation (muscle and yeast cells) 2. Krebs Cycle (Aerobic Respiration) <ol style="list-style-type: none"> a. Reactants and Products b. Location (matrix) c. Role of NADH and FADH₂ d. Net yield of ATP 3. Electron Transport Chain (Aerobic Respiration) <ol style="list-style-type: none"> a. Location (inner membranes of mitochondrion) b. Role of NADH and FADH₂ c. ATP synthases d. Products e. Net yield of ATP 	<ul style="list-style-type: none"> • State the overall equation for cellular respiration. • Describe the role of enzymes during anabolic and catabolic reactions including their specificity. • Describe how the ATP-ADP cycle powers the anabolic and catabolic reactions and its role in cellular processes such as digestion, protein synthesis, photosynthesis and respiration. • Describe the basic processes of anaerobic (fermentation) and aerobic respiration and their importance in energy and chemical cycles, including the following: raw materials, form and amounts of energy produced, chemical products, and the location of the processes. • Describe the division of labor among cells and explain how it permits a higher degree of specialization among multicellular organisms. 	<p>Core Text Book: Chapter 7</p> <p>Vocabulary: (see p.2) Cellular Respiration, Aerobic,</p> <p>Technology: (see p.2) 1. www.PHSchool.com Cellular Respiration Activity (cbp-3091)</p> <p>Strategies: (see p.2)</p> <ul style="list-style-type: none"> ○ ELL: ○ Enrichment: ○ SPED: <p>Assessment: (see p.2) 1. Formal and authentic 2. Lab reports</p> <p>Labs: (see p.2) 1. Cellular Respiration (HSL)</p> <p>Related Program: NA</p>

**MIAMI-DADE COUNTY PUBLIC SCHOOLS
District Pacing Guide**

BIOLOGY I HONORS

Course Code: 200032001

BODY OF KNOWLEDGE: L: Life Science

TOPIC X: Cell Cycle and Mitosis

Pacing		Date(s)
Traditional	6 Days	11-23-11 to 12-02-11
Block	3 Days	11-23-11 to 12-02-11

NEXT GENERATION SUNSHINE STATE STANDARDS	ESSENTIAL CONTENT	OBJECTIVES	INSTRUCTIONAL TOOLS
<p>Standard 14: Organization and Development of Living Organisms SC.912.L.14.2</p> <p>Standard 16: Heredity and Reproduction SC.912.L.16.14 SC.912.L.16.15</p> <p>Standard 18: Matter and Energy Transformations SC.912.L.18.1 SC.912.L.18.2 SC.912.L.18.3 SC.912.L.18.4</p>	<p>A. Cell Cycle 1. Interphase (G₁, S, G₂) 2. Mitotic Phase (Mitosis & Cytokinesis)</p> <p>B. Mitosis (Nuclear division) 1. Phases (Prophase, Metaphase, Anaphase, Telophase) 2. Formation of 2 diploid daughter cells from diploid parent cell</p> <p>C. Cytokinesis (Cytoplasmic Division)</p> <p>D. Comparison of Plant and Animal Cell Mitosis</p>	<ul style="list-style-type: none"> Identify the functions of cell division in unicellular and multicellular organisms, e.g. reproduction, repair and growth. Name the main events of the cell cycle. Describe what happens during the phases of mitosis. Locate, identify the functions of, and describe how the following cell organelles or areas are adapted to carry out processes needed by the cell: nucleus, cytoplasm, cell membrane, nuclear membrane, chromosome, centrioles, ribosome, mitochondrion, plastid, lysosomes, vacuoles, endoplasmic reticulum, Golgi apparatus and cell wall. Understand that during cytokinesis cytoplasmic organelles also divide. Describe the division of labor among cells and explain how it permits a higher degree of specialization among multicellular organisms. Cite differences between plant and animal cell mitosis. 	<p>Core Text Book: Chapter 9 (9.1, 9.2, 9.3)</p> <p>Vocabulary: (see p.2) Cell cycle, Interphase, Mitosis, Prophase, Metaphase, Anaphase, Telophase,</p> <p>Technology: (see p.2) 1. www.PHSchool.com <i>Cell Growth</i> (cbd-3101); <i>Cell Cycle Activity</i> (cbp-3102)</p> <p>Strategies: (see p.2) o ELL: o Enrichment: o SPED:</p> <p>Assessment: (see p.2) 1. Formal and authentic 2. Lab reports</p> <p>Labs: (see p.2) 1. <i>Prepared Slides Onion Cells - LM</i></p> <p>Related Program: NA</p>

MIAMI-DADE COUNTY PUBLIC SCHOOLS
District Pacing Guide

BIOLOGY I HONORS

Course Code: 200032001

BODY OF KNOWLEDGE: L: Life Science

Pacing		Date(s)
Traditional	6 days	12-05-11 to 12-12-11
Block	3 days	12-05-11 to 12-12-11

TOPIC XI: Meiosis

NEXT GENERATION SUNSHINE STATE STANDARDS	ESSENTIAL CONTENT	OBJECTIVES	INSTRUCTIONAL TOOLS
<p>Standard 16: Heredity and Reproduction SC.912.L.16.13 SC.912.L.16.16 SC.912.L.16.17</p>	<p>A. Meiosis</p> <ol style="list-style-type: none"> 1. Gamete formation 2. Formation of 4 haploid daughter cells from a diploid parent cell 3. Stages I and II (Prophase, Metaphase, Anaphase, Telophase, Cytokinesis) 4. Tetrad formation 5. Sexual reproduction 6. Homologous chromosomes <p>A. Genetic Variation Resulting From Meiosis</p> <ol style="list-style-type: none"> 1. Assortments of Chromosomes 2. Crossing Over (Genetic Recombination) <p>B. Comparison of Mitosis and Meiosis</p>	<ul style="list-style-type: none"> • Compare and contrast homologous chromosomes and sister chromatids. • Differentiate between haploid and diploid cells. • Identify the functions of cell division in unicellular and multicellular organisms, e.g. reproduction, repair, and growth. • Summarize the process of meiosis. • Explain how chromosome assortment during meiosis contributes to genetic variation. • Describe how crossing over contributes to genetic variation. • Compare and contrast meiosis and mitosis. 	<p>Core Text Book: Chapter 9 (9.5 & 9.6)</p> <p>Vocabulary: (see p.2) Meiosis, Haploid, Diploid,</p> <p>Technology: (see p.2)</p> <ol style="list-style-type: none"> 1. Meiosis Activity <ol style="list-style-type: none"> a. Visit: PHSchool.com Code: cbp-4114 2. Meiosis Tutorial <p>Strategies: (see p.2)</p> <ul style="list-style-type: none"> ○ ELL: ○ Enrichment: ○ SPED: <p>Assessment: (see p.2)</p> <ol style="list-style-type: none"> 1. Formal and authentic 2. Lab reports <p>Labs: (see p.2)</p> <ol style="list-style-type: none"> 1. Meiosis Square Dance - LM <p>Related Program: NA</p>

**MIAMI-DADE COUNTY PUBLIC SCHOOLS
District Pacing Guide**

BIOLOGY I HONORS

Course Code: 200032001

BODY OF KNOWLEDGE: L: Life Science – HE: Health Education

TOPIC XII: Heredity – Mendelian Genetics

Pacing		Date(s)
Traditional	10 Days	12-13-11 to 01-10-12
Block	5 Days	12-13-11 to 01-10-12

NEXT GENERATION SUNSHINE STATE STANDARDS	ESSENTIAL CONTENT	OBJECTIVES	INSTRUCTIONAL TOOLS
<p>Standard 16: Heredity and Reproduction SC.912.L.16.1 SC.912.L.16.2 SC.912.L.16.16 SC.912.L.16.17</p> <p>Standard 1: Concepts HE.912.C.1.8</p>	<p>A. Mendel's Experiments</p> <ol style="list-style-type: none"> 1. Pea Plants (True-breeding lines and traits) 2. Factors (Genes) 3. Dominant and recessive alleles 4. Genotype and Phenotype 5. Homozygous and Heterozygous 6. Law of Dominance 7. Principle of Segregation 8. Principle of Independent Assortment <p>B. Probability and Punnett Squares</p> <ol style="list-style-type: none"> 1. Crosses involving a single trait (Monohybrid) 2. Crosses involving two traits (Dihybrid) 3. Testcross <p>C. Chromosome Theory of Inheritance</p> <p>D. Patterns of Inheritance</p> <ol style="list-style-type: none"> 1. Dominance 2. Intermediate inheritance (e.g. Andalusian chickens) 3. Codominance (e.g. Blood type AB) 4. Multiple allelic inheritance (e.g. Blood types) 5. Polygenic inheritance (e.g. Human height) 6. Sex-linked traits (e.g. hemophilia) <p>E. Linked Genes and Crossing Over</p>	<ul style="list-style-type: none"> • Recognize the traits in Mendel's pea plant experiments. • Distinguish between genotype and phenotype. • Understand the difference between dominant and recessive alleles. • Distinguish between homozygous and heterozygous. • Identify Mendel's principles and relate them to inheritance of traits. • Understand that probability involves chance and does not predict actual outcomes. • Use Punnett squares to solve problems involving monohybrid and dihybrid crosses. • Use Punnett squares to solve problems involving a testcross. • Summarize the chromosome theory of inheritance. • Use Punnett squares to solve problems involving intermediate inheritance, multiple allelic inheritance, and sex-linked traits. • Identify the functions of cell division in unicellular and multicellular organisms, e.g. reproduction, repair and growth. • Explain how genetic linkage provides exceptions to Mendel's principle of independent assortment. 	<p>Core Text Book: Chapter 11</p> <p>Vocabulary: (see p.2) Genetics, Probability, Punnett square, Trait, Gene, Factor,</p> <p>Technology: (see p.2)</p> <ol style="list-style-type: none"> 1. www.SciLinks.org <ol style="list-style-type: none"> a. Links on Mendelian Genetics (cbn-4113); b. Links on Punnett Squares (cbn-4112) <p>Strategies: (see p.2)</p> <ul style="list-style-type: none"> ○ ELL: ○ Enrichment: ○ SPED: <p>Assessment: (see p.2)</p> <ol style="list-style-type: none"> 1. Formal and authentic 2. Lab reports <p>Labs: (see p.2)</p> <ol style="list-style-type: none"> 1. Investigating Inherited Traits (HSL) 2. Differences in Similar Phenotypes (HSL) <p>Related Program: NA</p>

**MIAMI-DADE COUNTY PUBLIC SCHOOLS
District Pacing Guide**

BIOLOGY I HONORS

Course Code: 200032001

BODY OF KNOWLEDGE: L: Life Science – HE: Health Education – LA: Language Arts

TOPIC XIII: Genetic Diseases and Human Genetics

Pacing		Date(s)
Traditional	7 Days	01-11-12 to 01-20-12
Block	3 Days	01-11-12 to 01-20-12

NEXT GENERATION SUNSHINE STATE STANDARDS	ESSENTIAL CONTENT	OBJECTIVES	INSTRUCTIONAL TOOLS
<p>Standard 15: Diversity and Evolution of Living Organisms. SC.912.L.15.15</p> <p>Standard 16: Heredity and Reproduction SC.912.L.16.2 SC.912.L.16.9 SC.912.L.16.16 SC.912.L.16.17</p> <p>Standard 1: Concepts HE.912.C.1.4</p> <p>Standard 4: Informative LA.910.4.2.2</p>	<p>A. DNA and the Human Genome Project</p> <p>B. Causes of Genetic diseases</p> <ol style="list-style-type: none"> 1. Nondisjunction during meiosis 2. Damaged Chromosomes (duplication, deletion, inversion, and translocation) 3. Gene mutation (e.g. Tay-Sachs disease) <p>C. Chromosomal Disorders</p> <ol style="list-style-type: none"> 1. Autosomal Chromosomes (Down Syndrome or Trisomy 21) 2. Sex Chromosomes (Turner's Syndrome, Klinefelter's Syndrome & other Trisomy conditions) <p>D. Sex-Linked Genes</p> <ol style="list-style-type: none"> 1. Definition 2. Disorders (Colorblindness and Hemophilia) 3. Morgan and Fruit fly eye color 4. Punnett square problems <p>E. Examining Human Chromosomes & Traits</p> <ol style="list-style-type: none"> 1. Karyotype 2. Pedigree (autosomal or sex-linked, dominant or recessive; e.g. Huntington's disease) 	<ul style="list-style-type: none"> • Recognize that DNA contains hereditary information and the importance & application of the Human Genome Project. • Identify the functions of cell division in unicellular and multicellular organisms, e.g. reproduction, repair and growth. • Describe how chromosomes can be damaged. • Identify the gene or chromosomal mutation involved in human disorders such as Down's syndrome, Huntington's disease, Hemophilia and Tay-Sachs disease. • Recognize disorders caused by sex-linked genes and predict outcomes using Punnett squares. • Identify chromosomal disorders by looking at a karyotype. • Identify types of diseases and/or disorders and list their effects upon the human body (degenerative, deficiency, hereditary, and contagious). • Summarize and interpret the information provided in a pedigree. • Identify conditions or disorders presented in a pedigree. 	<p>Core Text Book: Ch.10 (10.4 & 10.5), Ch. 12 (12.1-12.3)</p> <p>Vocabulary: (see p.2) DNA, Sex-linked gene, Nondisjunction,</p> <p>Technology: (see p.2)</p> <ol style="list-style-type: none"> 1. Animated Biological Concepts Videos/WS: Nondisjunction; Human Sex Determination; Duplication & Deletion; Translocation & Inversion <p>Strategies: (see p.2)</p> <ul style="list-style-type: none"> ○ ELL: ○ Enrichment: ○ SPED: <p>Assessment: (see p.2)</p> <ol style="list-style-type: none"> 1. Formal and authentic 2. Lab reports <p>Labs: (see p.2)</p> <ol style="list-style-type: none"> 1. Making Karyotypes (HSL) 2. Genetic Disorders: Informational Poster and Presentation (HSL) <p>Related Program: NA</p>