

Lowndes County Biology II Pacing Guide 2009-2010

MS Frameworks Pacing Guide Worksheet

Grade Level: Biology II
Grading Period: 1st—9 weeks

Chapter/Unit	Lesson Topic	Objective Number	Approximate Days Needed	Suggested Teaching Strategies
1	The Process of Science	1. Apply inquiry-based and problem-solving processes and skills to scientific investigations	2 weeks	1) Assign students a current experimental discovery to research and present to class. Including procedures and outcomes. 2) Conduct lab experiment involving growth of plants in different types of light. Have students construct graphs to show results and explain the outcomes. 3) Discuss the scientific method and other processes used in science.
4	Membrane Structure and Function	2a – Relate the structure and function of a selectively permeable membrane to its role in diffusion and osmosis.	1 week	1) Demonstrate the principle of semi-permeability with sandwich bag/iodine demo. 2) Discuss the structure of the cell membrane that allows it to be semi-permeable. 3) Discuss and demonstrate osmosis in different solutions using eggs.
3	Enzymes	2c – Analyze and describe the function of enzymes in biochemical reactions	1 week	1) Discuss the structure of enzymes and the reason for the “lock and key” structure. 2) Demonstrate enzyme activity using Liver Lab.
5/6	Cellular Respiration: Harvesting Chemical Energy/Photosynth	2d – Differentiate between photosynthesis and cellular respiration.	2 weeks	1) Identify the following equations related to cellular respiration: overall equation, glycolysis, Krebs cycle, electron transport chain. 2) Discuss oxidation and reduction reactions. 3) Identify the following equations for

	esis: Converting Energy to Chemical Energy			photosynthesis: overall equation, light reactions, Calvin cycle.
7	The Cell Cycle and Mitosis	2b – Summarize how cell regulation controls and coordinates cell growth and division.	1 week	<ol style="list-style-type: none"> 1) Discuss the process of mitosis. 2) Have students construct pamphlets detailing the process of mitosis. 3) Compare images of real cells with diagrams of cells in order to determine the stage of mitosis shown.
7	Meiosis, the Basis of Sexual Reproduction	3a – Explain how the process of meiosis clarifies the mechanism underlying Mendel’s conclusions about segregation and independent assortment on a molecular level.	1 week	<ol style="list-style-type: none"> 1) Discuss the process of meiosis. 2) Compare and contrast the processes of mitosis and meiosis. 3) Have students construct diagrams of the steps involved in meiosis.

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Grade Level: Biology II
Grading Period: 2nd—9 weeks

Chapter/Unit	Lesson Topic	Objective Number	Approximate Days Needed	Suggested Teaching Strategies
8	Mendel's Principles	3a – Explain how the process of meiosis clarifies the mechanism underlying Mendel's conclusions about segregation and independent assortment on a molecular level.	2 weeks	1) Discuss Mendel's principles of segregation and independent assortment. 2) Use Punnett squares to predict genotypic and phenotypic outcomes of offspring.
9	Molecular Biology of the Gene	3b – Research and explain how major discoveries led to the determination of DNA structure. 3c – Relate gene expression to protein structure and function.	2 weeks	1) Construct a DNA model. 2) Describe the processes of replication, transcription, and translation. Explain how they are involved in inheritance of characteristics. 3) Research the discovery of DNA. 4) Use Principles of Mendelian Genetics Lab.
11	DNA Technology and the Human Genome	3d – Assess the potential implications of DNA technology with respect	2 weeks	1) Discuss the beginning of DNA technology. 2) Identify the many uses

		to its impact on society. 3e – Develop a logical argument defending or refuting bioethical issues arising from applications of genetic technology.		of DNA technology and predict how these uses will continue to impact human society. 3) Assign students to either be for or against one of several Biotechnology Ethical issues. Have students research their stand and participate in classroom debate.
17	The Biosphere: Earth's Diverse Environments	4a – Explain the history of life on Earth and infer how geological changes provide opportunities and constraints for biological evolution. 4i – Analyze changes in an ecosystem resulting from natural causes, changes in climate, human activity, or introduction of non-native species.	2 weeks	1) Identify abiotic and biotic conditions that affect the biosphere. 2) Have students research and present presentation on one of Earth's biomes. 3) Differentiate between physiological, anatomical, and behavioral responses of organisms to the environment.

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Grade Level: Biology II
Grading Period: 3rd—9 weeks

Chapter/Unit	Lesson Topic	Objective Number	Approximate Days Needed	Suggested Teaching Strategies
31 (A Journey Into Life)	Behavior	4f – Cite examples to justify behaviors that have evolved through natural selections.	2 weeks	1) Watch Planet Earth video to identify mating, territorial and parental behaviors in various organisms. 2) Distinguish between types of learning. Identify benefits and difficulties with each.
19	Community Ecology	4e – Compare and contrast the basic types of selection. 4i – Analyze changes in an ecosystem resulting from natural causes, or introduction of non-native species.	2 weeks	1) Use richness and relative abundance to calculate the diversity of particular communities. 2) Use Food Chain Activity 3) Compare and contrast symbiotic relationships in a community.
12	How Populations Evolve	4b – Provide support for the argument based upon evidence from anatomy, embryology, biochemistry, and paleontology that organisms descended	2 weeks	1) Identify evidence that supports evolutionary theory. 2) Describe how natural selection leads to evolution of new species.

		<p>with modification from common ancestry.</p> <p>4g – Research and explain the contributions of 19th century scientists on the formulation of ideas about evolution.</p> <p>4h – Develop a logical...</p>		3) Use Population Evolution lab.
13	How Biological Diversity Evolves	<p>4a – Explain the history of life on Earth and infer how geological changes provide opportunities and constraints for biological evolution.</p> <p>4c – Identify and provide supporting evidence for the evolutionary relationships among various organisms using phylogenetic trees and cladograms.</p> <p>4d – Formulate a scientific explanation based on fossil records...</p>	2 weeks	<p>1) Construct timeline of geological history. Highlighting major evolutionary events in each Era.</p> <p>2) Use dichotomous keys to help classify organisms.</p> <p>3) Explain the necessity of scientific naming in taxonomy.</p>

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Grade Level: Biology II
Grading Period: 4th—9 weeks

Chapter/Unit	Lesson Topic	Objective Number	Approximate Days Needed	Suggested Teaching Strategies
14	The Evolution of Microbial Life	5a – Classify organisms according to traditional Linnaean classification characteristics and the cladistic approach. 5b – Categorize organisms according to the characteristics that distinguish them as Bacteria, Archae, or Eukarya.	2 weeks	1) Grow cultures of bacteria from swabs taken around the school. 2) Compare and contrast the Domains Archae and Bacteria. 3) Compare and contrast the Kingdoms Monera and Protista.
16	The Evolution of Animals (Invertebrates)	5a – Classify organisms according to traditional Linnaean classification characteristics and the cladistic approach. 5b – Categorize organisms according to	2 weeks	1) Using earthworms, identify major identifying characteristics of annelids. 2) Compare and contrast each phylum of

		the characteristics that distinguish them as Bacteria, Archae, or Eukarya.		invertebrates for anatomical and physiological characteristics.
16	The Evolution of Animals (Vertebrates)	5a – Classify organisms according to traditional Linnaean classification characteristics and the cladistic approach. 5b – Categorize organisms according to the characteristics that distinguish them as Bacteria, Archae, or Eukarya.	2 weeks	1) Identify major characteristics of Chordates. 2) Identify some main orders of Class Mammalia.
15	Fungi	5a – Classify organisms according to traditional Linnaean classification characteristics and the cladistic approach. 5b – Categorize organisms according to the characteristics that distinguish them as Bacteria, Archae, or Eukarya.	1 week	1) Grow mold and view under microscope. 2) Identify main characteristics of Fungi. 3) Research commercial uses of Fungi.
Review for Final Exam			1 week	