



| First Quarter (23 Blocks) | Second Quarter (23 Blocks) | Third Quarter (24 Blocks) | Fourth Quarter (19 Blocks) |
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| <p>August 28 – November 3 Introduction to Biology & Scientific Problem Solving (2 Blocks)</p> <p>Bio.1</p> <ul style="list-style-type: none"> > Classroom procedures and laboratory safety > Methods of scientific problem-solving and experimental design > Nature of Science (NOS) > Characteristics of Life > Science process skills <p>Unit 1 Biochemistry (8 Blocks) Bio.2a-c, Bio.1</p> <ul style="list-style-type: none"> > Properties of water > Carbon-based molecules > Enzymes > Science process skills (<i>infused</i>) <p>Unit 2 Cell Structure & Function (9 Blocks) Bio.3, Bio.1</p> <ul style="list-style-type: none"> > Cell theory > Cell types (prokaryotic, eukaryotic) > Organelles and their functions > Biological membranes > Cell surface area to volume ratio > Cell transport (diffusion, osmosis, active transport) > Science process skills (<i>infused</i>) <p>Unit 3 Cell Energetics (3 Blocks) Bio.2d, Bio.1</p> <ul style="list-style-type: none"> > Chemical energy (ATP) > Photosynthesis > Cellular respiration > Science process skills (<i>infused</i>) <p><i>Note: Remaining blocks are unscheduled to accommodate assessment, inclement weather, and other events impacting instruction.</i></p> | <p>November 8 – January 26 Unit 4 Cell Growth, Division & Specialization (7 Blocks) Bio.5a-c, Bio.1</p> <ul style="list-style-type: none"> > Stages of the somatic cell cycle > Nuclear division in somatic cells (phases of mitosis) > Stages of cell division in gamete formation (phases of meiosis) > Comparison of mitosis and meiosis > Importance of cell specialization > Science process skills (<i>infused</i>) <p>Unit 5 Nucleic Acids & Protein Synthesis (5 Blocks) Bio.5e, g, h, Bio.1</p> <ul style="list-style-type: none"> > Key events in the development of structural model of DNA > DNA structure, replication > Role of RNA in transcription and translation > Science process skills (<i>infused</i>) <p>Unit 6 Genetics & Heredity (7 Blocks) Bio.5d, f, I, J, Bio.1</p> <ul style="list-style-type: none"> > Mendelian laws of heredity (principle of dominance; laws of segregation and independent assortment) > Genes, chromosomes, and traits > Probability and genetic crosses > Complex patterns of inheritance > Human genetics > DNA technology and genetic engineering > Science process skills (<i>infused</i>) <p><i>Note: Remaining blocks are unscheduled to accommodate assessment, inclement weather, and other events impacting instruction.</i></p> | <p>January 30 – April 13 Unit 7 Evolution (7 Blocks) Bio.7, Bio.1</p> <ul style="list-style-type: none"> > Early evolutionary ideas > Darwin and natural selection > Evidence of evolution > Evolution in populations (genetic variation, reproductive strategies, environmental pressures) > Speciation > Origin and history of life > Science process skills (<i>infused</i>) <p>Unit 8 Classification & Diversity (14 Blocks; 21 Total) Bio.6, Bio.4a-c, e-f; Bio.1</p> <ul style="list-style-type: none"> > Linnaean system of classification (hierarchy of taxae; binomial nomenclature; limitations) > Modern classification—evolutionary relationships and cladistics > Current classification system > Viruses (structure, reproduction, infection and disease) > Archaea and Bacteria domains (prokaryotic structure, survival strategies; beneficial roles; disease and germ theory of infection) > Eukarya domain (Protista, Plantae, Fungi, and Animalia kingdoms)—comparison of structure and metabolic activity among representative members) > Science process skills (<i>infused</i>) <p><i>Note: Remaining blocks are unscheduled to accommodate assessment, inclement weather, and other events impacting instruction.</i></p> | <p>April 17 – June 8 Unit 8 Classification & Diversity (cont.) (7 Blocks; 21 Total)</p> <ul style="list-style-type: none"> > Continued study of classification and survey of diversity of life <p>Unit 9 Ecology (11 Blocks) Bio.8, Bio.1</p> <ul style="list-style-type: none"> > Biotic and abiotic factors > Cycling of energy and matter in ecosystems (food chains, webs, nutrient cycles, energy pyramids) > Organisms—habitat and niche > Community interactions—competition, predation; symbiotic relationships > Populations—density and growth (carrying capacity, limiting factors, growth curves) > Community succession patterns > Impacts on ecosystems > Virginia ecosystems (meaningful watershed studies) > Science process skills (<i>infused</i>) <p>Unit 10 Human Biology (2 Blocks) Bio.4d, Bio.1</p> <ul style="list-style-type: none"> > Mechanisms of homeostasis > Interactions among systems > Body systems—structure and function > Science process skills (<i>infused</i>) <p><i>Note: Instruction on Unit 10 can be scheduled for after the Biology Standards of Learning assessment. Conclude instruction two weeks prior to the scheduled testing window. Post-assessment instructional time should be used for reinforcement and extension of course content.</i></p> |