

Biology - Formal Pacing Guide

Established: 2016-17

Revised 2022-2023

Marking Period 1- 40 Days

- **Unit 1 - Organic Chemistry and Cycling of Matter** (Standards:1-5, 1-6, 1-7, 2-3, 2-4, 2-5)
 - Introduction to Biology and Lab Safety
 - The Biosphere (5 days)
 - Chapter 3.1, 3.3
 - Chapter 3 Foundations Workbook for review
 - Digital Resource- Science Skills Activity: Factors Affecting Growth
 - Digital Resource- Simulation: Where Organisms Live
 - Energy, Producers, Consumers and Energy Flow (5 days)
 - Chapter 4.1, 4.2
 - Digital Resource- Interactivity: Ecological Pyramids
 - Digital Resource- Science Skills Activity: Food Web
 - Cycles of Matter (5 Days)
 - Chapter 4.3
 - Digital Resource- Interactivity: Biogeochemical Cycles
 - Digital Resource- Engineering Interactivity: Construct a Wetland
- **Unit 2 - Ecology** (Standards: 2-1, 2-2, 2-6)
 - Populations (5 days)
 - Chapter 5.1, 5.2
 - Digital Resource- Interactivity: Limiting Factors
 - Digital Resource- Science Skills Activity: Pythons in the Everglades
 - Human Population (5 days)
 - Chapter 5.3
 - Digital Resource- Interactivity: Human Population Growth
 - Digital Resource- Simulation: Investigate Population Growth Rates
 - Habitats and Niches in Succession (5 Days)
 - Chapter 6.1, 6.2
 - Digital Resource- Science Skills Activity: Life on the Reef
 - Digital Resource- Science Skills Activity: Identifying Disturbances
 - Biodiversity, Ecosystems, and Resilience (5 Days)
 - Chapter 6.3
 - Digital Resource- Interactivity: Biodiversity in Ecosystems
 - Digital Resource- Engineering Interactivity: Designing a Rainwater Capture System
- **Unit 3 - Human Impact** (Standards: 2-2, 2-7, 4-4)
 - Humans and Global Change and Its Effects (5 days)
 - Chapter 7.1, 7.2
 - Digital Resource- Engineering Interactivity: Wetland Restoration
 - Digital Resource- Science Skills Activity: Controlling Invasives
 - Measuring and Responding to Change to create Sustainability (5 days)
 - Chapter 7.3, 7.4

- Digital Resource- Science Skills Activity: Plan an Urban Tree Planting
- Digital Resource- Science Skills Activity: Biogas Farming

Marking Period 2 - 40 Days

- **Unit 1 - Organic Chemistry and Cycling of Matter** (Standards:1-5, 1-6, 1-7, 2-3, 2-4, 2-5)
 - Carbon Compounds and Nutrition (5 days)
 - Chapter 2.3
 - Digital Resource - Interactivity: Understanding Macromolecules
 - Digital Resource- Science Skills Activity: Dietary Fat & Blood Cholesterol Levels
 - Chemical Reactions and Enzymes (5 Days)
 - Chapter 2.4
 - Digital Resource - Interactivity: Functioning of Enzymes
 - Digital Resource- Simulation: Optimum Conditions for Enzymes
 - Photosynthesis (5 Days)
 - Chapter 9.1, 9.2
 - Digital Resource- Science Skills Activity: The Effect of Light on the Rate of Photosynthesis
 - Digital Resource- Science Skills Activity: Photosynthesis and Cellular Respiration
 - Cellular Respiration (5 Days)
 - Chapter 10.1
 - Digital Resource- Science Skills Activity: Algae and Biofuels
 - Digital Resource- Science Skills Activity: Exercise and Mitochondria
 - Fermentation (5 Days)
 - Chapter 10.3
 - Digital Resource- Interactivity: Comparing Cellular Respiration and Fermentation
 - Digital Resource- Interactive Video: Fermentation and Exercise
- **Unit 4 - Homeostasis** (Standards: 1-2, 1-3, 1-4)
 - Specialized Cells to Maintain a Complex Organism (5 days)
 - Chapter 8.3, 8.4
 - Digital Resource- Interactivity: Multicellular Life
 - Digital Resource- Science Skills Activity: Cell Transport in Plants
 - Digital Resource- Interactive Video: Maintaining Homeostasis
 - Cellular Division to Maintain a Complex Organism (5 days)
 - Chapter 11.3, 11.4
 - Digital Resource- Interactive Video: Maintaining Homeostasis
 - Digital Resource- Science Skills Activity: Specialized Cells
 - Feedback Mechanism and Interacting Systems: Part 1 (5 days)
 - Chapter 25 Foundations Workbook for Review
 - Digital Resource- Interactivity: Interacting Systems
 - Digital Resource- Simulation: Clam Farming
 - Feedback Mechanism and Interacting Systems: Part 2 (5 days)
 - Chapter 26 Foundations Workbook for Review
 - Digital Resource- Science Skills Activity: Regulating Blood Temperature
 - Digital Resource- Simulation: Adaptations of Sense Organs

Marking Period 3- 40 Days

Unit 5 - Heredity: DNA and Genetics (Standards: 1-1, 3-1, 3-2, 3-3)

- Probability of Genetics (5 days)
 - Chapter 12.1, 12.2
 - Digital Resource- Science Skills Activity: Guinea Pig Genetics
 - Digital Resource- Simulation: Dominant or Recessive?
- Other Patterns of Inheritance and Gene Mapping (5 days)
 - Chapter 12.3, 12.4
 - Digital Resource- Interactive Video: Morgan and Sturtevant
 - Digital Resource- Simulation: Lily Breeding
- DNA (5 days)
 - Chapter 13
 - Digital Resource- Science Skills Activity: Replicating DNA
 - Digital Resource- Simulation: Experiments with DNA
- Ribosomes and Protein Synthesis (5 days)
 - Chapter 14.1, 14.2
 - Digital Resource- Interactive Video: Reverse Transcription
 - Digital Resource- Science Skills Activity: Where is RNA made and Where does it go?
- Mutations and Gene Regulation/Expression (5 Days)
 - Chapter 14.3, 14.4
 - Digital Resource- Interactivity: Zika and Genetically Modified Mosquitoes
 - Digital Resource- Science Skills Activity: Investigating Point Mutations
- Human Chromosomes and Genetic Disorders(5 Days)
 - Chapter 15.1, 15.2
 - Digital Resource- Interactive Video: Muscle Fibers
 - Digital Resource- Simulation: Color Blindness
- Studying the human Genome (5 days)
 - Chapter 15.3
 - Digital Resource- Interactivity: Manipulating DNA
 - Digital Resource- Science Skills Activity: Genomic Sequencing
- Selective Breeding and Recombinant DNA (5 days)
 - Chapter 16.1, 16.2
 - Digital Resource- Interactive Video: Diversity in Purebred Dogs
 - Digital Resource- Science Skills Activity: Transforming an Animal
- Application, Ethics, and Impacts of Biotechnology (5 Days)
 - Chapter 16.3, 16.4
 - Digital Resource- Interactive Video: Genetically Modified Organisms
 - Digital Resource- Science Skills Activity: Identifying Individuals

Marking Period 4- 40 Days

- **Unit 6 - Biological Evolution** (Standards: 2-8, 4-1, 4-2, 4-3, 4-4, 4-5)
 - Darwin Voyage and Ideas (5 days)
 - Chapter 17.1, 17.2
 - Digital Resource- Interactive Video: The Galapagos Islands
 - Digital Resource- Interactive Video: Development of Darwin's Theory
 - Darwin's Case(5 days)

- Chapter 17.3
 - Digital Resource- Interactivity: Discovering Natural Selection
 - Digital Resource- Simulation: Bird Beaks
- Darwin's Evidence (5 days)
 - Chapter 17.4 and 28.4
 - Chapter 28.4 Biology Foundations Workbook for Review
 - Digital Resource- Interactivity: Evidence of Evolution
 - Digital Resource- Science Skills Activity: Darwin's Finches
- Evolution as Genetic Change in Populations (5 Days)
 - Chapter 18.1, 18.2
 - Digital Resource- Science Skills Activity: Genetic Changes in Populations
 - Digital Resource- Simulation: Allele Frequencies
- The Process of Speciation (5 days)
 - Chapter 18.3
 - Digital Resource- Interactivity: Speciation
 - Digital Resource- Science Skills Activity: Ring Species
- Classifying and Modern Evolution with DNA (5 days)
 - Chapter 19.1
 - Digital Resource- Interactivity: Classifying Organisms
 - Digital Resource- Interactive Video: Discovering New Species
- Cladograms and the Tree of Life (5 days)
 - Chapter 19.2
 - Digital Resource- Interactivity: Cladograms
 - Digital Resource- Science Skills Activity: Shark Classification
- Patterns and Process of Evolution (5 Days)
 - Chapter 20.2
 - Digital Resource- Interactivity: Evolutionary Process
 - Digital Resource- Science Skills Activity: Identifying Evolutionary Relationships
- Earth's Early History (5 days)
 - Chapter 20.3
 - Digital Resource- Interactivity: Origin of Life
 - Digital Resource- Interactive Video: Life Changes on Earth