Biology Pacing Guide

First Marking Period

Unit 1: Introduction to Biology - 2 Weeks
Themes of Biology, Characteristics of Life, Scientific Method, Lab Reports
Standards:
10.5: Changes in the environment may result in the selection of organisms that are better able to survive and reproduce.
Assured Experiences: (4)
Science Fair Proposal & Research
Lab Safety & Procedures Activity
Designing a controlled Experiment
Graphing Activity

Unit 2: Biochemistry - 2 Weeks
Organic Compounds, Chemical reactions, Enzymes
Standards:
10.1: Most of the chemical activities of the cell are catalyzed by enzymes that function only in a narrow range of temperature and acidity conditions.
D29: Describe the general role of enzymes in metabolic cell processes
Assured Experiences: (2)
Embedded Task #1: **Applesauce & Enzymes**
Penny lab

Unit 3: Cell Structure and Function - 4/5 Weeks
Prokaryote/Eukaryote Cells, Plant/Animal Cells, Bacteria/Viruses, Prevention/Treatment of illness
Standards:
D27: Describe significant similarities and differences in the basic structure of plant and animal cells.
D30: Explain the role of the cell membrane in supporting cell functions.
D31: Describe the similarities and differences between bacteria and viruses.
D32: Describe how bacterial and viral infectious diseases are transmitted, and explain the roles of sanitation, vaccination and antibiotic medications in the prevention and treatment of infectious diseases.
Assured Experiences: (2)
Cell Study Using the Microscope (T 125, Text Bk: Biology Exploring Life)
Diffusion/ Osmosis Lab (Osmosis lab – T119 Text Bk: Biology Exploring Life)

Second Marking Period

Unit 4: Photosynthesis and Respiration - 4 Weeks
Photosynthesis, Respiration, Fermentation, Populations
Standards:
10.1: The cellular processes of photosynthesis and respiration involve transformation of matter and energy.
D29: Describe the general role of enzymes in metabolic cell processes.

D33: Explain how bacteria and yeasts are used to produce foods for human consumption.
10.6: Living organisms have the capability of producing populations of unlimited size, but the environment can support only a limited number of individuals from each species.
D43: Describe the factors that affect the carrying capacity of the environment.
D44: Explain how change in population density is affected by emigration, immigration, birth rate and death rate, and relate these factors to the exponential growth of human populations.
D45: Explain how technological advances have affected the size and growth rate of human populations throughout history.
Assured Experiences: (2)
Embedded Tasks #2: Yeast Population
Embedded Task #3: Human Population (Recommended as Homework)

Unit 5: Cell Division - 2/3 Weeks
Mitosis and Meiosis
Standards:
D36: Explain how meiosis contributes to the genetic variability of organisms.
Assured Experience: (1)
Students write a play or story to illustrate phases of mitosis and meiosis.

Third Marking Period: CAPT Testing In March

Unit 6: DNA & Protein Synthesis - 3/4 Weeks
DNA & RNA structure/function, Transcription/Translation, Mutation
Standards:
D28: Describe the general role of DNA and RNA in protein synthesis
D34: Describe, in general terms, how the genetic information of organisms can be altered to make them produce new materials.
D35: Explain the risks and benefits of altering the genetic composition and cell products of existing organisms.
D40: Explain how the processes of genetic mutation and natural selection are related to the evolution of species.

Assured Experiences: (4)

Embedded Task #4: Bioengineered Foods (Recommended as Homework – Feb. Vacation)
Decoding Activity
DNA extraction lab
Finish Science Fair

Unit 7: Genetics - 4 Weeks
Punnet Squares, Modes of Inheritance, Genetic disorders
Standards:
D37: Use the Punnet Square technique to predict the distribution of traits in mono- and di-hybrid crossings.
D38: Deduce the probable mode of inheritance of traits (e.g., recessive/dominant, sex-linked) from pedigree diagrams showing phenotypes.
D39: Describe the difference between genetic disorders and infectious diseases.

Assured Experiences: (3)
Genetic Probability Activity
Blood type Simulation Lab
Genetic Disorders Lab

Fourth Marking Period: Time allotted is flexible

Unit 8: Evolution – 2 / 3Weeks
Natural Selection, Adaptation, Theories of Evolution
Standards:
D40: Explain how the processes of genetic mutation and natural selection are related to the evolution of species.
D41: Explain how the current theory of evolution provides a scientific explanation for fossil records of ancient life forms.
D42: Describe how structural and behavioral adaptations increase the chances for organisms to survive in their environments.
Assured Experiences: (1)
Natural Selection Lab

Unit 9: Immunology & Pathology – 2 / 3 Weeks
Pathogens, Immune Responses, AIDS
Standards:
D31: Describe the similarities and differences between bacteria and viruses.
D32: Describe how bacterial and viral infectious diseases are transmitted, and explain the roles of sanitation, vaccination and antibiotic medications in the prevention and treatment of infectious diseases.
D39: Describe the difference between genetic disorders and infectious diseases.
Assured Experiences: (1)
Disease transmission lab

Unit 10: Ecology – 3 / 4 Weeks
Ecosystems, Relationships between organisms, Populations, Biomes
Standards:
D42: Describe how structural and behavioral adaptations increase the chances for organisms to survive in their environments.
D43: Describe the factors that affect the carrying capacity of the environment.
Assured Experiences: (2)
Owl pellet Dissection
Biome Project