

BIOLOGY TEKS

(1) The student is expected to:

- (A) **DEMONSTRATE** safe practices during laboratory and field investigations.
- (B) **DEMONSTRATE** an understanding of the use and conservation of resources and the proper disposal or recycling of materials.

(2) The student is expected to:

- (A) **KNOW** the definition of science and **UNDERSTAND** that it has limitations.
- (B) **KNOW** that hypotheses are tentative and testable statements that must be capable of being supported or not supported by observational evidence. Hypotheses of durable explanatory power which have been tested over a wide variety of conditions are incorporated into theories.
- (C) **KNOW** scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well-established and highly-reliable explanations, but they may be subject to change as new areas of science and new technologies are developed.
- (D) **DISTINGUISH** between scientific hypotheses and scientific theories.
- (E) **PLAN** and **IMPLEMENT** descriptive, comparative, and experimental investigations, including asking questions, formulating testable hypotheses, and selecting equipment and technology.
- (F) **COLLECT** and **ORGANIZE** qualitative and quantitative data and **MAKE MEASUREMENTS** with accuracy and precision using tools such as calculators, spreadsheet software, data-collecting probes, computers, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, electronic balances, gel electrophoresis apparatuses, micropipettors, hand lenses, Celsius thermometers, hot plates, lab notebooks or journals, timing devices, cameras, Petri dishes, lab incubators, dissection equipment, meter sticks, and models, diagrams, or samples of biological specimens or structures.
- (G) **ANALYZE, EVALUATE, MAKE INFERENCES, AND PREDICT** trends from data.
- (H) **COMMUNICATE** valid conclusions supported by the data through methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.

(3) The student is expected to:

- (A) in all fields of science, **ANALYZE, EVALUATE, AND CRITIQUE** scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student.
- (B) **COMMUNICATE** and **APPLY** scientific information extracted from various sources such as current events, news reports, published journal articles, and marketing materials.
- (C) **DRAW** inferences based on data related to promotional materials for products and services.
- (D) **EVALUATE** the impact of scientific research on society and the environment.
- (E) **EVALUATE** models according to their limitations in representing biological objects or events.
- (F) **RESEARCH** and **DESCRIBE** the history of biology and contributions of scientists.

Reporting Category	# of Items	Readiness Standards	Supporting Standards
1 Cell Structure and Function	11	<p>(4B) <u>INVESTIGATE</u> and <u>EXPLAIN</u> cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules</p> <p>(4C) <u>COMPARE</u> the structures of viruses to cells, <u>DESCRIBE</u> viral reproduction, and <u>DESCRIBE</u> the role of viruses in causing diseases such as human immunodeficiency virus (HIV) and influenza</p> <p>(5A) <u>DESCRIBE</u> the stages of the cell cycle, including deoxyribonucleic acid (DNA) replication and mitosis, and the importance of the cell cycle to the growth of organisms</p> <p>(9A) <u>COMPARE</u> the structures and functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids</p>	<p>(4A) <u>COMPARE</u> and contrast prokaryotic and eukaryotic cells</p> <p>(5B) <u>EXAMINE</u> specialized cells, including roots, stems, and leaves of plants; and animal cells such as blood, muscle, and epithelium</p> <p>(5C) <u>DESCRIBE</u> the roles of DNA, ribonucleic acid (RNA), and environmental factors in cell differentiation</p> <p>(5D) <u>RECOGNIZE</u> that disruptions of the cell cycle lead to diseases such as cancer</p> <p>(9D) <u>ANALYZE</u> and <u>EVALUATE</u> the evidence regarding formation of simple organic molecules and their organization into long complex molecules having information such as the DNA molecule for self-replicating life</p>
2 Mechanisms of Genetics	11	<p>(6A) <u>IDENTIFY</u> components of DNA, and <u>DESCRIBE</u> how information for specifying the traits of an organism is carried in the DNA</p> <p>(6E) <u>IDENTIFY</u> and <u>ILLUSTRATE</u> changes in DNA and <u>EVALUATE</u> the significance of these changes</p> <p>(6F) <u>PREDICT</u> possible outcomes of various genetic combinations such as monohybrid crosses, dihybrid crosses and non-Mendelian inheritance</p>	<p>(6B) <u>RECOGNIZE</u> that components that make up the genetic code are common to all organisms</p> <p>(6C) <u>EXPLAIN</u> the purpose and process of transcription and translation using models of DNA and RNA</p> <p>(6D) <u>RECOGNIZE</u> that gene expression is a regulated process</p> <p>(6G) <u>RECOGNIZE</u> the significance of meiosis to sexual reproduction</p> <p>(6H) <u>DESCRIBE</u> how techniques such as DNA fingerprinting, genetic modifications, and chromosomal analysis are used to study the genomes of organisms</p>
3 Biological Evolution and Classification	10	<p>(7A) <u>ANALYZE</u> and <u>EVALUATE</u> how evidence of common ancestry among groups is provided by the fossil record, biogeography, and homologies, including anatomical, molecular, and developmental</p> <p>(7E) <u>ANALYZE</u> and <u>EVALUATE</u> the relationship of natural selection to adaptation and to the development of diversity in and among species</p> <p>(8B) <u>CATEGORIZE</u> organisms using a hierarchical classification system based on similarities and differences shared among groups</p>	<p>(7B) <u>ANALYZE</u> and <u>EVALUATE</u> scientific explanations concerning any data of sudden appearance, stasis, and sequential nature of groups in the fossil record</p> <p>(7C) <u>ANALYZE</u> and <u>EVALUATE</u> how natural selection produces change in populations, not individuals</p> <p>(7D) <u>ANALYZE</u> and <u>EVALUATE</u> how the elements of natural selection, including inherited variation, the potential of a population to produce more offspring than can survive, and a finite supply of environmental resources, result in differential reproductive success</p> <p>(7F) <u>ANALYZE</u> and <u>EVALUATE</u> the effects of other evolutionary mechanisms, including genetic drift, gene flow, mutation, and recombination</p> <p>(7G) <u>ANALYZE</u> and <u>EVALUATE</u> scientific explanations concerning the complexity of the cell</p> <p>(8A) <u>DEFINE</u> taxonomy and <u>RECOGNIZE</u> the importance of a standardized taxonomic system to the scientific community</p> <p>(8C) <u>COMPARE</u> characteristics of taxonomic groups, including archaea, bacteria, protists, fungi, plants, and animals</p>
4 Biological Processes and Systems	11	<p>(10A) <u>DESCRIBE</u> the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals</p> <p>(10B) <u>DESCRIBE</u> the interactions that occur among systems that perform the functions of transport, reproduction, and response in plants</p>	<p>(9B) <u>COMPARE</u> the reactants and products of photosynthesis and cellular respiration in terms of energy and matter</p> <p>(9C) <u>IDENTIFY</u> and <u>INVESTIGATE</u> the role of enzymes</p> <p>(10C) <u>ANALYZE</u> the levels of organization in biological systems and relate the levels to each other and to the whole system</p> <p>(11A) <u>DESCRIBE</u> the role of internal feedback mechanisms in the maintenance of homeostasis</p>
5 Interdependence of Environmental Systems	11	<p>(11D) <u>DESCRIBE</u> how events and processes that occur during ecological succession can change populations and species diversity</p> <p>(12A) <u>INTERPRET</u> relationships, including predation, parasitism, commensalism, mutualism, and competition among organisms</p> <p>(12C) <u>ANALYZE</u> the flow of matter and energy through trophic levels using various models, including food chains, food webs, and ecological pyramids</p> <p>(12F) <u>DESCRIBE</u> how environmental change can impact ecosystem stability</p>	<p>(11B) <u>INVESTIGATE</u> and <u>ANALYZE</u> how organisms, populations, and communities respond to external factors</p> <p>(11C) <u>SUMMARIZE</u> the role of microorganisms in both maintaining and disrupting the health of both organisms and ecosystems</p> <p>(12B) <u>COMPARE</u> variations and adaptations of organisms in different ecosystems</p> <p>(12D) <u>RECOGNIZE</u> that long-term survival of species is dependent on changing resource bases that are limited</p> <p>(12E) <u>DESCRIBE</u> the flow of matter through the carbon and nitrogen cycles and <u>EXPLAIN</u> the consequences of disrupting these cycles</p>
Total Items	54		