| **Cell Structure and Function**  **B.4 Science concepts.** The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells. | | **Unit** | **CHECKPOINT** | | |
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| **Process** (Tools to Know) | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| B.2(F) collect and organize qualitative/quantitative data; make accurate measurements using tools  *connected* *B.1(A), B.1(B), B.2(A), B.2(B), B.2(C), B.2(D), B.2(E)* | |  |  |  |  |
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| **Content** | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| **Cellular Complexity** | |  |  |  |  |
| B.4(B) | investigate and explain cellular processes, including homeostasis and transport of molecules |  |  |  |  |
| B.4(A) | compare and contrast prokaryotic and eukaryotic cells, including their complexity, and compare and contrast scientific explanations for cellular complexity |  |  |  |  |
|  | |  |  | | |
| **Viruses** | |  |  |  |  |
| B.4(C) | compare the structures of viruses to cells, describe viral reproduction, and describe the role of viruses in causing diseases such as human immunodeficiency virus (HIV) and influenza |  |  |  |  |
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| **Process** (Ways to Show) | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| B.2(G) analyze, evaluate, make inferences, and predict trends from data  B.2(H) communicate conclusions supported by data  B.3(E) evaluate models according to their limitations  *connected B.3(A), B.3(B), B.3(C), B.3(D), B.3(F)* | |  |  |  |  |

| **Organism Growth and Cell Differentiation**  **B.5 Science concepts.** The student knows how an organism grows and the importance of cell differentiation. | | | **Unit** | **CHECKPOINT** | | |
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| **Process** (Tools to Know) | | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| B.2(F) collect and organize qualitative/quantitative data; make accurate measurements using tools  *connected* *B.1(A), B.1(B), B.2(A), B.2(B), B.2(C), B.2(D), B.2(E)* | | |  |  |  |  |
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| **Content** | | | **Unit** | **CHECKPOINT** | | |
| **Cell Cycle** | | |  |  |  |  |
| B.5(A) | | describe 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 |  |  |  |  |
| B.5(C) | B.5(D)  [2010] | recognize that disruptions of the cell cycle lead to diseases such as cancer |  |  |  |  |
|  | | |  |  | | |
| **Cell Differentiation** | | |  |  |  |  |
| B.5(B) | B.5(C)  [2010] | describe the roles of DNA, ribonucleic acid (RNA), and environmental factors in cell differentiation |  |  |  |  |
|  | | |  |  |  |  |
| **Process** (Ways to Show) | | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| B.2(G) analyze, evaluate, make inferences, and predict trends from data  B.2(H) communicate conclusions supported by data  B.3(E) evaluate models according to their limitations  *connected B.3(A), B.3(B), B.3(C), B.3(D), B.3(F)* | | |  |  |  |  |

| **>> Mechanisms of Genetics**  **B.6 Science concepts.** The student knows the mechanisms of genetics such as the role of nucleic acids and the principles of Mendelian and non-Mendelian genetics. | | **Unit** | **CHECKPOINT** | | |
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| **1** | **2** | **3** |
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| **Process** (Tools to Know) | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| B.2(F) collect and organize qualitative/quantitative data; make accurate measurements using tools  *connected* *B.1(A), B.1(B), B.2(A), B.2(B), B.2(C), B.2(D), B.2(E)* | |  |  |  |  |
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| **Content** | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| **Components of DNA** | |  |  |  |  |
| B.6(A) | identify components of DNA, identify how information for specifying the traits of an organism is carried in the DNA, and examine scientific explanations for the origin of DNA |  |  |  |  |
| B.6(B) | recognize that components that make up the genetic code are common to all organisms |  |  |  |  |
|  | |  |  | | |
| **Transcription and Translation** | |  |  |  |  |
| B.6(C) | explain the purpose and process of transcription and translation using models of DNA and RNA |  |  |  |  |
| B.6(D) | recognize that gene expression is a regulated process |  |  |  |  |
|  | |  |  | | |
| **Mutations** | |  |  |  |  |
| B.6(E) | identify and illustrate changes in DNA and evaluate the significance of these changes |  |  |  |  |
|  | |  |  | | |
| **Genetic Variation** | |  |  |  |  |
| B.6(F) | predict possible outcomes of various genetic combinations such as monohybrid crosses, dihybrid crosses, and non-Mendelian inheritance |  |  |  |  |
| B.6(G) | recognize the significance of meiosis to sexual reproduction |  |  |  |  |
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| **Process** (Ways to Show) | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| B.2(G) analyze, evaluate, make inferences, and predict trends from data  B.2(H) communicate conclusions supported by data  B.3(E) evaluate models according to their limitations  *connected B.3(A), B.3(B), B.3(C), B.3(D), B.3(F)* | |  |  |  |  |

*>> TEKS clusters typically requiring additional time and focus in the curriculum*

| **>> Evolutionary Theory**  **B.7 Science concepts.** The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. | | **Unit** | **CHECKPOINT** | | |
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| **1** | **2** | **3** |
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| **Process** (Tools to Know) | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| B.2(F) collect and organize qualitative/quantitative data; make accurate measurements using tools  *connected* *B.1(A), B.1(B), B.2(A), B.2(B), B.2(C), B.2(D), B.2(E)* | |  |  |  |  |
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| **Content** | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| **Evolution** | |  |  |  |  |
| B.7(A) | analyze and evaluate how evidence of common ancestry among groups is provided by the fossil record, biogeography, and homologies, including anatomical, molecular, and developmental |  |  |  |  |
| B.7(B) | examine scientific explanations of abrupt appearance and stasis in the fossil record |  |  |  |  |
|  | |  |  | | |
| **Natural Selection** | |  |  |  |  |
| B.7(E) | analyze and evaluate the relationship of natural selection to adaptation and to the development of diversity in and among species |  |  |  |  |
| B.7(C) | analyze and evaluate how natural selection produces change in populations, not individuals |  |  |  |  |
| B.7(D) | analyze and evaluate 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 |  |  |  |  |
| B.7(F) | analyze other evolutionary mechanisms, including genetic drift, gene flow, mutation, and recombination |  |  |  |  |
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| **Process** (Ways to Show) | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| B.2(G) analyze, evaluate, make inferences, and predict trends from data  B.2(H) communicate conclusions supported by data  B.3(E) evaluate models according to their limitations  *connected B.3(A), B.3(B), B.3(C), B.3(D), B.3(F)* | |  |  |  |  |

*>> TEKS clusters typically requiring additional time and focus in the curriculum*

| **Taxonomy of Organisms**  **B.8 Science concepts.** The student knows that taxonomy is a branching classification based on the shared characteristics of organisms and can change as new discoveries are made. | | **Unit** | **CHECKPOINT** | | |
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| **Process** (Tools to Know) | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| B.2(F) collect and organize qualitative/quantitative data; make accurate measurements using tools  *connected* *B.1(A), B.1(B), B.2(A), B.2(B), B.2(C), B.2(D), B.2(E)* | |  |  |  |  |
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| **Content** | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| **Taxonomy** | |  |  |  |  |
| B.8(B) | categorize organisms using a hierarchical classification system based on similarities and differences shared among groups |  |  |  |  |
| B.8(A) | define taxonomy and recognize the importance of a standardized taxonomic system to the scientific community |  |  |  |  |
| B.8(C) | compare characteristics of taxonomic groups, including archaea, bacteria, protists, fungi, plants, and animals |  |  |  |  |
|  | |  |  |  |  |
| **Process** (Ways to Show) | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| B.2(G) analyze, evaluate, make inferences, and predict trends from data  B.2(H) communicate conclusions supported by data  B.3(E) evaluate models according to their limitations  *connected B.3(A), B.3(B), B.3(C), B.3(D), B.3(F)* | |  |  |  |  |

| **Molecules**  **B.9 Science concepts.** The student knows the significance of various molecules involved in metabolic processes and energy conversions that occur in living organisms. | | **Unit** | **CHECKPOINT** | | |
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| **1** | **2** | **3** |
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| **Process** (Tools to Know) | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| B.2(F) collect and organize qualitative/quantitative data; make accurate measurements using tools  *connected* *B.1(A), B.1(B), B.2(A), B.2(B), B.2(C), B.2(D), B.2(E)* | |  |  |  |  |
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| **Content** | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| **Biochemistry in Living Organisms** | |  |  |  |  |
| B.9(A) | compare the functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids |  |  |  |  |
|  | |  |  | | |
| **Energy Conversions in Living Organisms** | |  |  |  |  |
| B.9(B) | compare the reactants and products of photosynthesis and cellular respiration in terms of energy, energy conversions, and matter |  |  |  |  |
| B.9(C) | identify and investigate the role of enzymes |  |  |  |  |
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| **Process** (Ways to Show) | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| B.2(G) analyze, evaluate, make inferences, and predict trends from data  B.2(H) communicate conclusions supported by data  B.3(E) evaluate models according to their limitations  *connected B.3(A), B.3(B), B.3(C), B.3(D), B.3(F)* | |  |  |  |  |

| **>> Levels of Biological Systems**  **B.10 Science concepts.** The student knows that biological systems are composed of multiple levels. | | **Unit** | **CHECKPOINT** | | |
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| **Process** (Tools to Know) | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| B.2(F) collect and organize qualitative/quantitative data; make accurate measurements using tools  *connected* *B.1(A), B.1(B), B.2(A), B.2(B), B.2(C), B.2(D), B.2(E)* | |  |  |  |  |
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| **Content** | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| **Interactions Among Systems** | |  |  |  |  |
| B.10(A) | describe the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals |  |  |  |  |
| B.10(B) | describe the interactions that occur among systems that perform the functions of transport, reproduction, and response in plants |  |  |  |  |
| B.10(C) | analyze the levels of organization in biological systems and relate the levels to each other and to the whole system |  |  |  |  |
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| **Process** (Ways to Show) | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| B.2(G) analyze, evaluate, make inferences, and predict trends from data  B.2(H) communicate conclusions supported by data  B.3(E) evaluate models according to their limitations  *connected B.3(A), B.3(B), B.3(C), B.3(D), B.3(F)* | |  |  |  |  |

*>> TEKS clusters typically requiring additional time and focus in the curriculum*

| **Ecological Succession**  **B.11 Science concepts.** The student knows that biological systems work to achieve and maintain balance. | | | **Unit** | **CHECKPOINT** | | |
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| **Process** (Tools to Know) | | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| B.2(F) collect and organize qualitative/quantitative data; make accurate measurements using tools  *connected* *B.1(A), B.1(B), B.2(A), B.2(B), B.2(C), B.2(D), B.2(E)* | | |  |  |  |  |
|  | | |  |  |  |  |
| **Content** | | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| **Ecological Succession** | | |  |  |  |  |
| B.11(B) | B.11(D)  [2010] | describe how events and processes that occur during ecological succession can change populations and species diversity |  |  |  |  |
| B.11(A) | B.11(C)  [2010] | summarize the role of microorganisms in both maintaining and disrupting the health of both organisms and ecosystems |  |  |  |  |
|  | | |  |  |  |  |
| **Process** (Ways to Show) | | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| B.2(G) analyze, evaluate, make inferences, and predict trends from data  B.2(H) communicate conclusions supported by data  B.3(E) evaluate models according to their limitations  *connected B.3(A), B.3(B), B.3(C), B.3(D), B.3(F)* | | |  |  |  |  |

| **>> Organism Behavior**  **B.12 Science concepts.** The student knows that interdependence and interactions occur within an environmental system. | | | **Unit** | **CHECKPOINT** | | |
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| **Process** (Tools to Know) | | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| B.2(F) collect and organize qualitative/quantitative data; make accurate measurements using tools  *connected* *B.1(A), B.1(B), B.2(A), B.2(B), B.2(C), B.2(D), B.2(E)* | | |  |  |  |  |
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| **Content** | | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| **Interdependence** | | |  |  |  |  |
| B.12(A) | | interpret relationships, including predation, parasitism, commensalism, mutualism, and competition, among organisms |  |  |  |  |
|  | | |  |  | | |
| **Matter and Energy Flow in Ecosystems** | | |  |  |  |  |
| B.12(C) | | analyze the flow of matter and energy through trophic levels using various models, including food chains, food webs, and ecological pyramids |  |  |  |  |
| B.12(D) | B.12(E)  [2010] | describe the flow of matter through the carbon and nitrogen cycles and explain the consequences of disrupting these cycles |  |  |  |  |
|  | | |  |  | | |
| **Ecosystem Stability** | | |  |  |  |  |
| B.12(E) | B.12(F)  [2010] | describe how environmental change can impact ecosystem stability |  |  |  |  |
|  | | |  |  | | |
| **Adaptations** | | |  |  |  |  |
| B.12(B) | | compare variations and adaptations of organisms in different ecosystems |  |  |  |  |
|  | | |  |  |  |  |
| **Process** (Ways to Show) | | | **Unit** | **CHECKPOINT** | | |
| **1** | **2** | **3** |
| B.2(G) analyze, evaluate, make inferences, and predict trends from data  B.2(H) communicate conclusions supported by data  B.3(E) evaluate models according to their limitations  *connected B.3(A), B.3(B), B.3(C), B.3(D), B.3(F)* | | |  |  |  |  |

*>> TEKS clusters typically requiring additional time and focus in the curriculum*

| **PROCESS STANDARDS: SCIENTIFIC INVESTIGATION AND REASONING** | | | **Unit** | | **CHECKPOINT** | | | | | |
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| **1** | | **2** | | **3** | |
| B.1 The student, for at least 40% of instructional time, conducts laboratory and field investigations using safe, environmentally appropriate, and ethical practices.  B.2 The student uses scientific practices and equipment during laboratory and field investigations.  B.3 The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. | **Tools to Know** |  | |  | |  | |  | |
| **Ways to Show** |  | |  | |  | |  | |

| **TOOLS TO KNOW** | | **Unit** | **CHECKPOINT** | | |
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| **1** | **2** | **3** |
| B.1(A) | demonstrate safe practices during laboratory and field investigations |  |  |  |  |
| B.1(B) | demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials |  |  |  |  |
| B.2(A) | know the definition of science and understand that it has limitations, as specified in chapter 112.34, subsection (b)(2) of 19 TAC |  |  |  |  |
| B.2(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 that have been tested over a wide variety of conditions are incorporated into theories |  |  |  |  |
| B.2(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 |  |  |  |  |
| B.2(D) | distinguish between scientific hypotheses and scientific theories |  |  |  |  |
| B.2(E) | plan and implement descriptive, comparative, and experimental investigations, including asking questions, formulating testable hypotheses, and selecting equipment and technology |  |  |  |  |
| B.2(F) | collect and organize qualitative and quantitative data and make measurements with accuracy and precision using tools such as data-collecting probes, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, balances, gel electrophoresis apparatuses, micropipettes, hand lenses, Celsius thermometers, hot plates, lab notebooks or journals, timing devices, Petri dishes, lab incubators, dissection equipment, meter sticks, and models, diagrams, or samples of biological specimens or structures |  |  |  |  |

| **WAYS TO SHOW** | | **Unit** | **CHECKPOINT** | | |
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| **1** | **2** | **3** |
| B.2(G) | analyze, evaluate, make inferences, and predict trends from data |  |  |  |  |
| B.2(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 |  |  |  |  |
| B.3(A) | analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing so as to encourage critical thinking by the student |  |  |  |  |
| B.3(B) | communicate and apply scientific information extracted from various sources such as current events, published journal articles, and marketing materials |  |  |  |  |
| B.3(C) | draw inferences based on data related to promotional materials for products and services |  |  |  |  |
| B.3(D) | evaluate the impact of scientific research on society and the environment |  |  |  |  |
| B.3(E) | evaluate models according to their limitations in representing biological objects or events |  |  |  |  |
| B.3(F) | research and describe the history of biology and contributions of scientists |  |  |  |  |