TTUISD - TEKS Tracker

Author ___Dale McCurdy_____ Submission Date _____/_____/_____

Evaluator_____ Evaluation Date _____/_____/_____

TTUISD: Biology 1A (BIO 1A) Course v.4.0
TEKS: §112.34, Beginning with School Year 2010-2011
TEXTBOOK: Miller, Kenneth R., and Joseph S. Levine. Biology (2015). Texas Edition. Hoboken, NJ: Pearson Education, Inc. Digital edition ISBN-10: 0-13-324517-9.
(This title may also be known as Miller & Levine Biology, Texas Biology Student Edition.)

TEKS Requirement (Secondary)		Sem. A	Lesson & Assignment Number	Textbook Chapter/Page #	Bloom's Taxonomy
§112.34. Biology, Beginning with School Year 2010-2011 (One Credit).					
(a) General requirements. Students shall be awarded one credit for successful completion of this course. Prerequisites: none. This course is recommended for students in Grade 9, 10, or 11.					
(b) Introduction.					
(1) Biology. In Biology, students conduct laboratory and field investigations, use scientific methods during investigations, and make informed decisions using critical thinking and scientific problem solving. Students in Biology study a variety of topics that include: structures and functions of cells and viruses; growth and development of organisms; cells, tissues, and organs; nucleic acids and genetics; biological evolution; taxonomy; metabolism and energy transfers in living organisms; living systems; homeostasis; and ecosystems and the environment.					
(2) Nature of science. Science, as defined by the National Academy of Sciences, is the "use of evidence to construct testable explanations and predictions of natural phenomena, as well as the knowledge generated through this process." This vast body of changing and increasing knowledge is described by physical, mathematical, and conceptual models. Students should know that some questions are outside the realm of science because they deal with phenomena that are not scientifically testable.					
(3) Scientific inquiry. Scientific inquiry is the planned and deliberate investigation of the natural world. Scientific methods of investigation are experimental, descriptive, or comparative. The method chosen should be appropriate to the question being asked.					
(4) Science and social ethics. Scientific decision making is a way of answering questions about the natural world. Students should be able to distinguish between scientific decision-making methods (scientific methods) and ethical and social decisions that involve science (the application of scientific information).					
(5) Science, systems, and models. A system is a collection of cycles, structures, and processes that interact. All systems have basic properties that can be described in space, time, energy, and matter. Change and constancy occur in systems as patterns and can be observed, measured, and modeled. These patterns help to make predictions that can be scientifically tested. Students should analyze a system in terms of its components and how these components relate to each other, to the whole, and to the external environment.					
(c) Knowledge and skills.					
(1) Scientific processes. The student, for at least 40% of instructional time, conducts laboratory and field investigations using safe, environmentally appropriate, and ethical practices. The student is expected to:					
(A) demonstrate safe practices during laboratory and field investigations; and		**A**	Lessons 1-15	1/24-25	Remember
(B) demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.		**A**	Lessons 1-15	6/155, 162, 170-174	Understand
(2) Scientific processes. The student uses scientific methods and equipment during laboratory and field investigations. The student is expected to:					
(A) know the definition of science and understand that it has limitations, as specified in subsection (b)(2) of this section;		**A**	Lessons 1-15	1/4, 5, 9, 14-15	Understand

TEKS Requirement (Secondary)		Sem. A	Lesson & Assignment Number	Textbook Chapter/Page #	Bloom's Taxonomy
(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;		**A**	Lessons 1-15	1/7-9, 10-11, 13	Understand
(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;		**A**	Lessons 1-15	1/13, 15	Understand
(D) distinguish between scientific hypotheses and scientific theories;		**A**	Lessons 1-15	1/13	Understand
(E) plan and implement descriptive, comparative, and experimental investigations, including asking questions, formulating testable hypotheses, and selecting equipment and technology;		**A**	Lessons 1-15	1/6-9, 13; 2/36, 43; 3/67,72	Create
(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;		**A**	Lessons 1-15	1/8, 24-25; 2/43; 10/283	Apply
(G) analyze, evaluate, make inferences, and predict trends from data; and		**A**	Lessons 1-15	1/8, 20; 2/48, 56; 3/77	Evaluate
(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.		**A**	Lessons 1-15	1/8	Understand
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. 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;		**A**	Lessons 1-15	1/16; 5/136; 9/261; 14/402, 409	Evaluate
(B) communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles, and marketing materials;		**A**	Lessons 1-15	1/26; 3/87; 10/288	Apply
(C) draw inferences based on data related to promotional materials for products and services;		**A**	Lessons 1-15	1/26;	Analyze
(D) evaluate the impact of scientific research on society and the environment;		**A**	Lessons 1-15	1/10-14, 26; 2/39; 6/175-179	Evaluate
(E) evaluate models according to their limitations in representing biological objects or events; and		**A**	Lessons 1-15	2/36; 3/68; 7/203	Evaluate
(F) research and describe the history of biology and contributions of scientists.		**A**	Lessons 1-15	1/4-5, 22-23; 4/105; 7/190-191	Remember
(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. The student is expected to:					
(A) compare and contrast prokaryotic and eukaryotic cells;		**A**	Lesson 7, 10, 12	7/193-194, 196-207; 10/279-282, 284	Remember
(B) investigate and explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules; and		**A**	Lesson 2, 7, 8, 9, 12, 13	1/19-20; 7/200-202, 204-205	Understand
(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.		**A**	SEMESTER B	-	Understand
(5) Science concepts. The student knows how an organism grows and the importance of cell differentiation. The student is expected to:					
(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;		**A**	Lesson 10, 12	10/279-284, 286-288; 12/350-353	Remember

TEKS Requirement (Secondary)		Sem. A	Lesson & Assignment Number	Textbook Chapter/Page #	Bloom's Taxonomy
(B) examine specialized cells, including roots, stems, and leaves of plants; and animal cells such as blood, muscle, and epithelium;		A	Lesson 7, 10	7/193, 215-217; 10/283, 292-295	Remember
(C) describe the roles of DNA, ribonucleic acid (RNA), and environmental factors in cell differentiation; and		A	Lesson 10, 13	10/292-295; 13/381-383	Remember
(D) recognize that disruptions of the cell cycle lead to diseases such as cancer.		A	Lesson 10	10/288-290	Remember
(6) Science concepts. The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. The student is expected to:					
(A) identify components of DNA, and describe how information for specifying the traits of an organism is carried in the DNA;		A	Lesson 12	12/342-345	Remember
(B) recognize that components that make up the genetic code are common to all organisms;		A	Lesson 13	1/18, 20; 12/345; 13/366-367, 371	Understand
(C) explain the purpose and process of transcription and translation using models of DNA and RNA;		A	Lesson 13	13/364-365, 368-371	Apply
(D) recognize that gene expression is a regulated process;		A	Lesson 13	13/370-371, 377-383	Understand
(E) identify and illustrate changes in DNA and evaluate the significance of these changes;		A	Lesson 13, 14	12/354; 13/372-376	Evaluate
(F) predict possible outcomes of various genetic combinations such as monohybrid crosses, dihybrid crosses and non-Mendelian inheritance;		A	Lesson 11, 14	11/311-321, 330; 14/394-397, 410	Apply
(G) recognize the significance of meiosis to sexual reproduction; and		A	Lesson 11	11/324-328	Understand
(H) describe how techniques such as DNA fingerprinting, genetic modifications, and chromosomal analysis are used to study the genomes of organisms.		A	Lesson 14, 15	14/392-393, 397, 403-410	Understand
(7) Science concepts. The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. The student is expected to:					
(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;		A	SEMESTER B	-	Evaluate
(B) analyze and evaluate scientific explanations concerning any data of sudden appearance, stasis, and sequential nature of groups in the fossil record;		A	SEMESTER B	-	Evaluate
(C) analyze and evaluate how natural selection produces change in populations, not individuals;		A	SEMESTER B	-	Evaluate
(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;		A	SEMESTER B	-	Evaluate
(E) analyze and evaluate the relationship of natural selection to adaptation and to the development of diversity in and among species;		A	SEMESTER B	-	Evaluate
(F) analyze and evaluate the effects of other evolutionary mechanisms, including genetic drift, gene flow, mutation, and recombination; and		A	SEMESTER B	-	Evaluate
(G) analyze and evaluate scientific explanations concerning the complexity of the cell.		A	SEMESTER B	-	Evaluate
(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. The student is expected to:					
(A) define taxonomy and recognize the importance of a standardized taxonomic system to the scientific community;		A	SEMESTER B	-	Remember
(B) categorize organisms using a hierarchical classification system based on similarities and differences shared among groups; and		A	SEMESTER B	-	Analyze
(C) compare characteristics of taxonomic groups, including archaea, bacteria, protists, fungi, plants, and animals.		A	SEMESTER B	-	Understand
(9) Science concepts. The student knows the significance of various molecules involved in metabolic processes and energy conversions that occur in living organisms. The student is expected to:					
(A) compare the structures and functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids;		A	Lesson 2	2/46-49, 54	Analyze
(B) compare the reactants and products of photosynthesis and cellular respiration in terms of energy and matter;		A	Lesson 8, 9	8/232-239; 9/253-260	Analyze
(C) identify and investigate the role of enzymes; and		A	Lesson 2	2/52-53; 9/265	Analyze

TEKS Requirement (Secondary)		Sem. A	Lesson & Assignment Number	Textbook Chapter/Page #	Bloom's Taxonomy
(D) analyze and evaluate 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.		**A**	SEMESTER B	-	Analyze
(10) Science concepts. The student knows that biological systems are composed of multiple levels. The student is expected to:					
(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;		**A**	Lesson 9	9/266	Analyze
(B) describe the interactions that occur among systems that perform the functions of transport, reproduction, and response in plants; and		**A**	SEMESTER B	-	Analyze
(C) analyze the levels of organization in biological systems and relate the levels to each other and to the whole system.		**A**	Lesson 1, 3, 7	3/64-65, 68; 7/215-217	Analyze
(11) Science concepts. The student knows that biological systems work to achieve and maintain balance. The student is expected to:					
(A) describe the role of internal feedback mechanisms in the maintenance of homeostasis;		**A**	SEMESTER B	-	Analyze
(B) investigate and analyze how organisms, populations, and communities respond to external factors;		**A**	Lesson 3, 4, 5	3/64-68, 89; 4/96, 99-100, 124; 5/130-135, 138	Analyze
(C) summarize the role of microorganisms in both maintaining and disrupting the health of both organisms and ecosystems; and		**A**	SEMESTER B	-	Understand
(D) describe how events and processes that occur during ecological succession can change populations and species diversity.		**A**	Lesson 4	4/106-109	Analyze
(12) Science concepts. The student knows that interdependence and interactions occur within an environmental system. The student is expected to:					
(A) interpret relationships, including predation, parasitism, commensalism, mutualism, and competition among organisms;		**A**	Lesson 5	4/100-104, 122; 5/137-141	Analyze
(B) compare variations and adaptations of organisms in different ecosystems;		**A**	Lesson 3, 4, 5, 6	3/67; 4/110-121; 6/166-167	Understand
(C) analyze the flow of matter and energy through trophic levels using various models, including food chains, food webs, and ecological pyramids;		**A**	Lesson 3	3/69-86, 88	Analyze
(D) recognize that long-term survival of species is dependent on changing resource bases that are limited;		**A**	Lesson 3, 4, 5, 6	3/85-86; 4/99-101; 5/137-140, 142-143, 147	Understand
(E) describe the flow of matter through the carbon and nitrogen cycles and explain the consequences of disrupting these cycles; and		**A**	Lesson 3, 6	3/82-86; 6/174-179	Evaluate
(F) describe how environmental change can impact ecosystem stability.		**A**	Lesson 4, 6	4/102-103; 5/136, 140-141, 146; 6/154-160, 163-165	Understand
Source: The provisions of this §112.34 adopted to be effective August 4, 2009, 34 TexReg 5063.					