Course Description
Biology
Texas
2016-17

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Biology Course Description

Unit: Comparing Prokaryotic and Eukaryotic Cells

Concepts *TEKS: 4A*

Lesson Components	Descriptions
Instruction Module	The Instruction Module, in this unit presents content that guides students to identify and recognize the similarities and differences between prokaryotic and eukaryotic cells. Students learn that one of the main differences between prokaryotic and eukaryotic cells is the presence of a nucleus and other membrane-bound organelles in eukaryotic cells that is absent in prokaryotic cells.
Interactivity	In the **Virtual Cell Tour** and **Identify and Classify!** Interactivities, students can take a virtual tour of prokaryotic and eukaryotic cells to review cell parts and their functions. They can also observe and classify a variety of different cells as either prokaryotic or eukaryotic based on observable characteristics. *TEKS- 4A, 2E, 2F, 2G*
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Prokaryotic and Eukaryotic Cells unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is essential to know when comparing and contrasting prokaryotic and eukaryotic cells. When complete, students can use this guide as a study guide, and teachers can use it as an assessment piece.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Comparing Prokaryotic and Eukaryotic Cells - *TEKS 2E, 2F, 4A*

Offline Activity	Comparing and Contrasting Prokaryotic and Eukaryotic Cells Venn Diagram Activity – *TEKS 2F, 2H, 3A, 4A* *Students compare and contrast the characteristics of prokaryotic and eukaryotic cells as they apply acquired knowledge to complete a Venn diagram.*

Unit: Cellular Processes

Concepts *TEKS: 4B*

Lesson Components	Descriptions
Instruction Module	The Instruction Module, in this unit presents content that addresses different cellular processes, such as energy conversions, the synthesis and transport of molecules, and maintaining homeostasis. Students learn about the different mechanisms by which molecules are transported into and out of a cell, including diffusion, osmosis, facilitated diffusion, active transport, and vesicle mediated transport, such as endocytosis and exocytosis.
Interactivity	In **The Cell It!** Interactivity provides students with an opportunity to apply knowledge as they compare and contrast active and passive cellular transport mechanisms to complete a Venn diagram. They also apply their understanding of transport mechanisms to observe and identify the type of transport mechanism being used by a cell. *TEKS- 2F, 2G, 2H, 4B*
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as a checks-for-understanding of the concepts presented in the Cellular Processes unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is essential to explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules. When complete, students can use this guide as a study guide, and teachers can use it as an assessment piece.

Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Cellular Processes - *TEKS 2G, 3A, 4B* Journal 2 - Cellular Processes – *TEKS 4B*
Offline Activity	Cellular Processes: Homeostasis- *TEKS 1A, 1B, 2E, 2F, 2G, 2H, 4B* *In this activity, students investigate osmosis as a process that helps cells maintain homeostasis internally despite changing external conditions.*

Unit: Viruses

Concepts *TEKS: 4C*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students learn why viruses are considered non-living. They compare and contrast viruses to prokaryotic and eukaryotic cells. They also learn about the two types of viral reproductive cycles – the lytic and the lysogenic cycles. They understand how viruses cause diseases, such as influenza and AIDS, and how the unique characteristics of viruses can be used to our benefit in gene therapy.
Interactivity	In **The Virus Attack** Interactivity, allows students to apply their knowledge of the lytic cycle as they construct a diagram to show the stages in the lytic reproductive cycle of a virus. *TEKS- 2F, 4C*
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Viruses unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.

Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is essential when comparing the structures of viruses to cells, when describing viral reproduction, when describing the role of viruses in causing certain diseases and in understanding that the characteristics that make viruses unique can be used to our benefit in gene therapy When complete, students can use this guide as a study guide, and teachers can use it as an assessment piece.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Viruses - *TEKS 2G, 3F, 4C* Journal 2 – Viruses - *TEKS 4C*
Offline Activity	Viruses Making News- *TEKS 2F, 2G, 2H, 3B, 3D, 4C* *In this activity, students use their knowledge and understanding of viruses and scientific evidence to evaluate the use of antiviral medications used to prevent an influenza outbreak.*

Unit: Cell Cycle

Concepts *TEKS: 5A*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module students are introduced to the different phases of the cell cycle, including the G1, S (DNA replication), and G2 phases of interphase and the four stages of mitosis – prophase, metaphase, anaphase, and telophase. Students are also able to witness the importance of the cell cycle to the growth of organisms.
Simulation	In the **Onion Cry'sis** Simulation, students first simulate how to focus a compound microscope to view a slide, as a review. Then, they perform a virtual scientific method lab activity where they use a virtual microscope to observe a slide of an onion root tip and identify the cell cycle stage each cell is in. Students analyze the data collected to draw a conclusion to solve the question presented in the beginning of the activity. *TEKS- 2E, 2F, 2G, 2H, 5A*

Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Cell Cycle unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is essential to know when describing the stages of the cell cycle, including DNA replication, mitosis, and the importance of the cell cycle to the growth of organisms. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Evaluating Models - *TEKS 2G, 3E, 5A*
Offline Activity	Describing Stages in the Cell Cycle – *TEKS 2F, 2G, 5A* *In this activity, students apply knowledge of the cell cycle as they sequence and describe the different phases of the cell cycle, including the S phase where DNA replication occurs.*

Unit: Specialized Cells

Concepts *TEKS: 5B*

Lesson Components	Descriptions
Instruction Module	**Specialized Plant Cells:** In this Instruction Module, students learn that multicellular plants are made up of several different kinds of cells that interconnect to form tissues. They learn that a plant is composed of the root system, consisting of the roots, and the shoot system that includes the leaves, the stem, and the flowers. Students learn how to identify and to describe the structure and function of the cells that make up different parts of a leaf, the stem, and the roots. **Specialized Animal Cells**: In this Instruction Module students learn that multicellular animals are made up of different types of cells

	that interconnect to form tissues. They learn that all the different types of cells form from embryonic cells. They also learn about the unique structure and functions of red blood cells, white blood cells, and platelets found in blood, epithelial cells found in skin, and of the cells found in skeletal muscle, smooth muscle, and cardiac muscle.
Interactivity	In the **Plant Cells** Interactivity, students apply their knowledge of specialized plant cells to identify different types of plant cells in a leaf and then review their structure and unique functions. *TEKS 2G, 5B* In the **Tiny Specialists** Interactivity, students apply knowledge of specialized animal cells to identify different types of specialized cells and then match their structures to their functions. *TEKS 2F, 2G, 5B*
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Specialized Cells unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guides are used with the Instruction Module to focus students' attention on information that is essential to know when examining specialized cells, including the roots, stems, and leaves of plants, animal cells such as blood, muscle, and epithelium. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Specialized Plant Cells - *TEKS 2G, 5B* Journal 2 - Specialized Plant Cells – Journal – Specialized Animal Cells -*TEKS 2F, 2G, 2H, 5B* Journal 2 - Specialized Animal Cells - TEKS 5B
Offline Activity	Plant's Special Cells – *TEKS 2F, 2G, 2H, 5B* *In this activity, students use plant cell cards to identify specialized plant cells, the tissues they form and their functions.* An Animal Cell Up Close – TEKS 2F, 2G, 2H, 5B

In this activity, students use an electron micrograph of a liver cell to identify the visible parts of the cell. Students then apply their knowledge of specialized animal cells to compare/ contrast the liver cell to other types of specialized animal cells.

Unit: Cell Differentiation

Concepts *TEKS: 5C*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module students are introduced to the role of gene expression in cellular diversity and complexity in multicellular organisms. Students also learn about the effects environmental factors, such as temperature, light, radiation, and exposure to chemicals, can have on cell differentiation.
Simulation	In the **Nile River Crocodiles** Simulation enables students to conduct a virtual scientific method experimental investigation to observe the effect the environmental factor, temperature, has in determining the sex of Nile River crocodiles. *TEKS 2E, 2F, 2G, 2H, 5C*
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Cell Differentiation unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is essential to understand how environmental factors can affect cell differentiation. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – miRNA and Cell Differentiation - *TEKS 2F, 2G, 2H, 3B, 5C*

Offline Activity	Cell Differentiation and lincRNA – *TEKS 2F, 2G, 2H, 3B, 3D, 3F, 5C* *In this activity, students research lincRNA using online resources to briefly summarize the history of the discovery of lincRNAs and the role they play in cell differentiation.*

Unit: Disruption in the Cell Cycle

Concepts TEKS: 5D

Lesson Components	Descriptions
Instruction Module	In this Instruction Module students learn about the importance of the different phases of the cell cycle of eukaryotic cells. They are introduced to the major checkpoints and proteins that regulate the cell cycle. They also identify the consequences of defects in the cell cycle.
Interactivity	In the **Disruptions in the Cell Cycle** Interactivity, students engage in the practical application of knowledge as they sequence images to show how disruption in the cell cycle can lead to the development of lung cancer. *TEKS 2F, 2G, 5D*
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Disruptions in the Cell Cycle unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is essential for recognizing that disruptions of the cell cycle can lead to certain diseases such as cancer. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.

Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Disruptions in the Cell Cycle – *TEKS 2G, 2H, 5D*
Offline Activity	Selecting the Best Sunscreen – *TEKS 2F, 2G, 2H, 3C, 5D* *In this activity, students will apply knowledge of how disruptions in the cell cycle can lead to diseases, such as skin cancer. Students will use information about the risks associated with UV exposure and the information provided about ingredients and directions for application found on sunscreen product labels to infer, evaluate and record a list of essential criteria to consider when choosing a sunscreen product.*

Unit: Molecules of Heredity - DNA

Concepts TEKS: 6A

Lesson Components	Descriptions
Instruction Module	**Molecules of Heredity:** This Instruction Module presents information about the components of DNA and RNA molecules. Students learn how DNA and RNA molecules are structured and identify and compare the components of DNA and RNA nucleotides. They can also access additional information on the scientists and experiments that established DNA as the molecule of heredity. **DNA Replication:** In this Instruction Module, students learn that segments of DNA, called genes, store all the information that controls the different traits of an organism. They learn how DNA is replicated and recognize the different steps of DNA replication. They also learn that DNA replication is semi-conservative and that each daughter DNA molecule consists of one original strand from the parent DNA and one newly synthesized strand.
Interactivity	In the **Nucleic Acids** Interactivity, students apply their knowledge of the components of DNA and RNA molecules and nucleotides to construct molecules of DNA and RNA. *TEKS 2F, 2G, 6A* In the **DNA Replication** Interactivity, students apply their knowledge of DNA replication to identify the enzymes required during the different stages of the process. *TEKS 2G, 6A*

Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Molecules of Heredity - DNA unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guides are used with the Instruction Module to focus student's attention on information that is essential to identifying the components of DNA and RNA molecules and to describe the process of DNA replication. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Molecules of Heredity- *TEKS 2B, 6A* Journal 2 – Molecules of Heredity- TEKS 6A Journal – DNA Replication – TEKS 2G, 2H, 3A, 6A Journal 2 – DNA Replication – TEKS 6A
Offline Activity	DNA Research Timeline – *TEKS 2F, 2H, 3B, 3D, 3F, 6A* *In this activity, students research and describe the contributions of various scientists in the discovery of DNA and its role in the study of genetics. Students use the information from their research to create a DNA Timeline. Once complete, students will use their timelines to evaluate the impact of this line of scientific research on society and the environment.*

Unit: Universal Genetic Code

Concepts *TEKS: 6B*

Lesson Components	Descriptions

Instruction Module	In this Instruction Module, students learn that the genetic code is nearly universal in the biological world. They also learn how this universality can be used for agricultural, industrial, and medical benefits.
Simulation	In the **Help the Hospital!** Simulation allows students to apply knowledge of the universal genetic code as they use DNA from a pancreatic cell and a bacterium to produce insulin through recombinant DNA technology. It emphasizes the universality of the genetic code and how it can be utilized to manufacture insulin for diabetic patients. TEKS 2E, 2G, 6B
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in The Universal Genetic Code unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is essential to recognize that the components that make up the genetic code are common to all organisms. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Universal Genetic Code – *TEKS 2F, 2G, 6B* Journal – Universal Genetic Code Lab Simulation – *TEKS 2G, 6B*
Offline Activity	Drawing Inferences from Promotional Materials for Services – *TEKS 2A, 2F, 2G, 2H, 3B, 3C, 6B* *Students use critical thinking and draw inferences based on data related to promotional materials for services.*

Unit: Protein Synthesis

Concepts *TEKS: 6C*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students learn how information stored in a gene is used to make a specific protein. They learn that transcription and translation are the two stages in the synthesis of a polypeptide chain that is then packaged into the corresponding protein. Detailed models of DNA and RNA are used to help explain the process and the purpose of transcription and translation.
Interactivity	In the **Transcription and Translation** Interactivity, students apply their understanding of the complementary base pairing rule between DNA and RNA nucleotide bases to choose the correct product in each stage of transcription and translation to produce a completed protein. They also use a codon amino acid chart to identify the amino acid that an mRNA codon codes for. *TEKS 2F, 2G, 6C*
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Protein Synthesis unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus student's attention on information that is essential to explain the purpose and process of transcription and translation. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Protein Synthesis – *TEKS 2.G, 6C* Journal 2 - Protein Synthesis – TEKS 6C

Offline Activity	Protein Synthesis Concept Map – *TEKS 2F, 2H, 6C* *In this activity, students use key terms to complete a concept map of the process of protein synthesis.*

Unit: Gene Expression

Concepts *TEKS: 6D*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students are introduced to the concept of gene expression in which genetic information is used to synthesize proteins, and recognize that gene expression is a regulated process. They also learn how genes are expressed in prokaryotic cells and in eukaryotic cells.
Simulation	In the **Switch On, Switch Off** Simulation, students conduct a virtual experimental investigation to determine whether the lactose and tryptophan operons in E. coli bacteria are switched on or off when exposed to different solutions. *TEKS 2E, 2F, 2G, 2H, 6D*
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Gene Expression unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is essential to recognize that gene expression is a regulated process. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.

Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Gene Expression – *TEKS 2G, 6D*

Unit: Mutations

Concepts *TEKS: 6E*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students learn that mutations are nucleotide base sequence errors that can affect single or multiple genes. They learn that mutations can either be gene mutations or chromosomal mutations as they learn to identify and describe the different kinds of gene and chromosomal mutations. They also learn about the beneficial and harmful effects of different mutations.
Interactivity	In the **Mutations** Interactivity, students apply their understanding of the different types of mutations to identify the type of mutation that is occurring and the resulting effects. TEKS 2G, 6E
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Mutations unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is essential to identify changes in DNA and evaluate the significance of these changes. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.

Offline Activity	Letter Mutations – *TEKS 6E* *In this activity, students apply their knowledge of nitrogenous base codes by using an RNA code chart to construct words instead of amino acids.*

Unit: Mendelian Crosses

Concepts *TEKS: 6F*

Lesson Components	Descriptions
Instruction Module	**Mendelian Monohybrid Crosses**: In this Instruction Module, students understand that traits are inheritable features. They study monohybrid crosses, first performed by Gregor Mendel, to study the pattern of inheritance of a single trait. They also learn how to predict possible outcomes of different monohybrid crosses using Punnett squares. **Mendelian Dihybrid Crosses**: In this Instruction Module students study Mendelian dihybrid crosses, or crosses performed by Gregor Mendel to study the simultaneous inheritance patterns of two traits. They also learn to predict the possible outcomes of dihybrid crosses using Punnett squares. **Non-Mendelian Genetics:** In this Instruction Module, students recognize that there are many traits that do not follow Mendel's laws of inheritance. They understand how and why non-Mendelian inheritance is different from Mendelian inheritance. They learn about the concepts of incomplete dominance, codominance, multiple allele inheritance, gene linkage, polygenic inheritance and sex linked inheritance.
Interactivity	In the **Going Batty Over Punnett Squares** Interactivity, students use Punnett square crosses and knowledge of dominant and recessive traits to determine the genotype for a given bat trait. *TEKS 2F, 2B, 2H, 6F* In the **Punnett Squares Interactivity**, students perform dihybrid crosses to investigate the simultaneous inheritance pattern of two different traits. *TEKS 2F, 2G, 2H, 6F* In the **Crossing Over Interactivity**, students observe the process of crossing over that occurs during meiosis and determine how the location of linked genes affects inheritance patterns. *TEKS 2.F, 2G, 6F*

Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Mendelian Crosses unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guides are used with the Instruction Module to focus students' attention on information that is essential to predict possible outcomes of various genetic combinations, including monohybrid crosses and dihybrid crosses, and to explain non-Mendelian inheritance. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Mendelian Monohybrid Crosses – *TEKS 2F. 2G. 2H, 6E* Journal – Mendelian Dihybrid Crosses – *TEKS 2F, 2G, 2H, 6E* Journal – Non-Mendelian Genetics – TEKS 2G, 2H, 6F
Offline Activity	Mendelian Monohybrid and Dihybrid Crosses – *TEKS 2F, 2G, 2H, 6E* *In this activity, students complete monohybrid crosses using Punnett squares to predict possible outcomes.* Non-Mendelian Crosses – *TEKS 2F, 2G, 2H, 6F* *This activity requires students to apply knowledge of predicting possible outcomes of various gene combinations using Non-mendelian crosses to make the predictions.*

Unit: Meiosis

Concepts *TEKS: 6G*

Lesson Components	Descriptions

Instruction Module	In this Instruction Module, students learn that meiosis results in the formation of sex cells or gametes, involved in sexual reproduction. They learn to describe the different stages of meiosis and recognize the significance of meiosis and sexual reproduction in increasing genetic variation.
Interactivity	In the **Phase Off!** Interactivity, students apply knowledge of meiosis to observe cells and identify the stage of meiosis the cell is in. *TEKS 2F, 2G, 6G*
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is essential to recognize and explain the significance of meiosis in sexual reproduction. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Meiosis – *TEKS 2G, 2H, 6G* Journal 2 – Meiosis – *TEKS 6G*

Unit: Applied Genetics

Concepts *TEKS: 6H*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students are introduced to methods and uses of DNA fingerprinting, including gel electrophoresis and Southern blotting. Students understand how a karyotype is used to classify and compare chromosomes. They describe some recombinant DNA techniques and explain how they are used.
Interactivity	In the **Whodunit?** Interactivity, students sequence the steps of DNA fingerprinting and use the resulting DNA fingerprints to identify the suspect who committed the crime. *TEKS 2G, 2H, 6G*
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Applied Genetics unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is essential to describe how techniques such as DNA fingerprinting, genetic modifications, and chromosomal analysis are used to study the genomes of organisms. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Applied Genetics – *TEKS 2H, 6G*
Offline Activity	Using Karyotypes to Perform Chromosomal Analysis – *TEKS 2F, 2G, 2H, 3A, 6H* *In this activity, students use karyotypes and chromosomal analysis to diagnose patients' conditions.*

Unit: Evidence of Common Ancestry

Concepts *TEKS: 7A*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students learn that the evolutionary theory can be used to explain the relationships between organisms. They analyze and evaluate anatomical, biogeographical, embryological, and molecular evidence for common ancestry.
Interactivity	In the **Create a Cladogram** Interactivity, students compare the amino acid sequences in a section of the cytochrome-c protein, of four different organisms with that of a human and construct a cladogram. *TEKS 2F, 2G, 2H, 7A*
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Evidence of Common Ancestry unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is essential to analyze and evaluate how evidence of common ancestry among groups is provided by the use of the fossil record, biogeography, comparative anatomy, embryology, and molecular biology. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Evidence of Common Ancestry – *TEKS 2G, 7A* Journal - Evidence of Common Ancestry and Biogeography – TEKS 7A

Offline Activity	Evidence of Common Ancestry- Homologous Structures Activity – *TEKS 2F, 2G, 2H, 3F, 7A* *Students observe, analyze, and evaluate drawings of homologous structures of 3 different mammals for evidence of common ancestry.* Hypotheses vs. Theories – TEKS 2B, 2C, 2D, 2F *Students compare and contrast hypotheses and theories and use information that distinguishes hypotheses from theories to complete a Venn diagram.*

Unit: Fossils and Evolution

Concepts TEKS: 7B

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students understand that all the fossils, along with the information about the rock layers they are found in, make up the fossil record. They analyze different scientific explanations for sudden appearance, stasis, and sequential nature of groups in existing fossil records.
Interactivity	In the **Layer 'n Record** Interactivity, students observe and predict how different geological factors affect fossilization. TEKS 2F, 2G, 2H, 7B
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Fossils and Evolution unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is essential to know when analyzing and evaluating scientific explanations concerning any data of sudden appearance, stasis, and sequential nature of groups in the fossil record. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.

Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Fossils and Evolution – *TEKS 2G, 2H, 7B* Journal – The Fossil Record: Gradualism vs. Punctuated Equilibrium – *TEKS 2G, 2H, 3A, 3B, 3D, 3F, 7B*

Unit: Organisms and Natural Selection

Concepts *TEKS: 7C*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students understand the process of natural selection. They identify traits in individuals and compare variants within a population. They observe and analyze how natural selection can bring about change in a population over time.
Simulation	In the **Modeling Bacterial Drug Resistance** Simulation, students model the effect of natural selection in the development of penicillin resistance in a sample bacterial population. *TEKS 2E, 2F, 2G, 2H, 7C*
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Organisms and Natural Selection unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that needed in order to analyze and evaluate how natural selection produces changes in populations and not individuals. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.

Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Organisms and Natural Selection – *TEKS 2G, 2H, 7C*
Offline Activity	Drug Resistant Bacteria – *TEKS 2G, 2H, 3A, 7C* *Students analyze and evaluate how natural selection produces change in populations, not individuals.*

Unit: Factors Leading to Natural Selection

Concepts *TEKS: 7D*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students understand that natural selection is a process. They identify and describe the factors that can lead to natural selection such as genetic variation in a population, finite supply of resources, and the potential of a population to produce more offspring than can survive. They also learn to describe the effects of natural selection on reproductive success.
Simulation	In the **Food for Finches** simulation, students investigate how environmental factors, such as availability of different food sources, can cause natural selection to act on traits, such as beak size and shape, and change the predominant phenotypes in a population over time. TEKS 2E, 2F, 2G, 2H, 7D
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Factors Leading to Natural Selection unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.

Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is needed in order to analyze and evaluate how the elements of natural selection, including genetic variation, potential to produce more offspring than can survive, and a finite supply of environmental resources, result in differential reproductive success. When complete, this can be used as a study guide and an assessment tool.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Factors Leading to Natural Selection – *TEKS 2G, 2H* Journal – Natural Selection and Reproductive Success – *TEKS 2G, 2H, 3A, 3B, 7D*

Unit: Natural Selection and Biological Diversity

Concepts *TEKS: 7E*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students understand the relationship between natural selection and adaptation. They explain how natural selection, over time, can lead to the formation of new species. They recognize that speciation can occur as a result of reproductive isolation of different populations.
Interactivity	In the **Reproductive Isolation and Speciation** Interactivity, students observe the different mechanisms of reproductive isolation and identify them. They identify the mode of speciation that occurs as a result of reproductive isolation. TEKS 2G, 2H, 7E
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Natural Selection and Biodiversity unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.

Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is needed in order to analyze and evaluate the relationship of natural selection to adaptation and to the development of diversity in and among species. When complete, this can be used as a study guide and an assessment tool.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Natural Selection and Biological Diversity – *TEKS 2G, 2H, 7E* Journal – Adaptive Radiation and Biodiversity – *TEKS 2G, 2H, 3B, 7E*

Unit: Evolutionary Mechanisms

Concepts *TEKS: 7F*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students analyze and evaluate the effects of evolutionary mechanisms other than natural selection, such as genetic drift, gene flow, mutation, recombination, and non-random mating, on populations of organisms.
Interactivity	In the **What's the Mechanism?** Interactivity, students observe images representing different evolutionary mechanisms and identify the relevant evolutionary mechanism associated with each image. They identify the evolutionary processes of gene flow, genetic drift, mutation, bottleneck, and founder effect. TEKS 2G, 2H, 7F
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Evolutionary Mechanisms unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.

Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information needed in order to analyze and evaluate the effects of other evolutionary mechanisms, including genetic drift, gene flow, mutation, and recombination. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Evolutionary Mechanisms – *TEKS 2G, 2H, 7F* Journal 2 – Evolutionary Mechanisms – *TEKS 2G, 2H, 7F*
Offline Activities	1) Analyzing and Evaluating the Effects of Genetic Drift and Recombination – *TEKS 2G, 3A, 3B, 7F* After viewing the instruction module Evolutionary Mechanisms, students will research and then analyze and evaluate the effects of the evolutionary mechanisms of genetic drift and recombination. 2) Analyzing and Evaluating the Effects of Genetic Drift - *TEKS 2G, 2H, 3A, 7F* In this activity, students analyze and evaluate the effect of genetic drift as an evolutionary mechanism on a population of beetles. 3) Analyzing and Evaluating the Effects of Recombination – *TEKS 2G, 2H, 6G, 7F* In this activity, students will analyze and evaluate the effects of recombination as an evolutionary mechanism in the variation of traits between siblings who have the same parents.

Unit: Cellular Evolution

Concepts TEKS: 7G

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students understand that the endosymbiotic theory explains the evolution of complex eukaryotes from simple symbiotic prokaryotic communities.

Interactivity	In the **Endosymbiotic Theory** Interactivity, students label the parts of a symbiotic bacterial community and understand how the different components interact by labeling the links between them. *TEKS 2F, 2G, 7G*
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Cellular Evolution unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is necessary in order to analyze and evaluate scientific explanations concerning the complexity of the cell. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Cellular Evolution – *TEKS 2G, 2H, 7G* Journal – Evidence of Endosymbiotic Theory – *TEKS 2F, 2G, 2H, 3A, 3B, 7G*

Offline Activities	1) The History of Biology – *TEKS 2F, 2G, 3F, 7G* Students use the internet and other resources to research and describe the history of biology and the contributions of scientists from the early 19th century. They use the information to create a timeline that describes the history of biology and the contributions of scientists in chronological order. 2) Endosymbiotic Hypothesis and Theory – *TEKS 2B, 2C, 2G, 2H, 3A, 7G* *Students learn about the development of the Endosymbiotic Theory from a hypothesis and use this information to distinguish the relationship between hypotheses and theories by creating an analogy.*

Unit: Biological Classification

Concepts *TEKS: 8A*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students are introduced to the concept of taxonomy. They compare old and current taxonomic systems, and explain why a globally standardized system is necessary and important to the scientific community.
Interactivity	In the **Sort the Aliens** Interactivity, students perform a hierarchical sorting of 8 alien organisms based on physical characteristics. They decide which characteristic best sorts the organisms into groups during each sorting stage. TEKS 2F, 2G, 2H, 8A
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Biological Classification unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.

Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is necessary in order to compare old and current taxonomic systems and recognize the importance of a standardized taxonomic system to the scientific community. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Biological Classification – *TEKS 2G, 2H, 8A* Journal – Importance of a Standardized Taxonomic System – *TEKS 2G, 2H, 8A*
Offline Activities	El Chupacabra: A New Species or Just An Urban Legend? – *TEKS 2A, 2B, 2F, 2G, 2H, 3A, 3B, 8A* *Students examine scientific evidence to determine whether a new species has been discovered.*

Unit: Classifying Organisms

Concepts *TEKS: 8B*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students learn that the hierarchical system of classification groups organisms into smaller and smaller categories based on increasing similarities in their physical characteristics. They learn that the hierarchical classification also helps to understand the evolutionary relationships between organisms. They also learn that scientists use tools called dichotomous keys to identify and classify organisms at different levels.
Interactivity	In the **Classifi-key-tion of Organisms** Interactivity, students apply their understanding of the hierarchical system of classification to group organisms into smaller and smaller categories. They also apply their understanding of how a dichotomous key is used, to identify the order to which four different mammals belong. *TEKS 2F, 2G, 2H, 8B*

Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Classifying Organisms unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is necessary in order to categorize organisms using a hierarchical classification system based on similarities and differences shared among groups. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Classifying Organisms – *TEKS 2G, 2H, 8B* Journal 2 - Classifying Organisms – TEKS 8B
Offline Activities	Design a Dichotomous Key – *TEKS 2F, 2G, 2H, 8B* *Students design a dichotomous key to classify eight different organisms.*

Unit: The Six Kingdom Classification System

Concepts *TEKS: 8C*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students learn that all organisms on Earth can be sorted into three domains and further into six kingdoms, namely Eubacteria, Archaebacteria, Protista, Fungi, Plantae, and Animalia. They learn to compare and contrast the characteristics of organisms in these six kingdoms and also learn about the evolutionary relationships between them.

Interactivity	In the **Tree of Life** Interactivity, students apply their understanding of how the six kingdoms are sorted in the three domains, and how organisms are sorted in Kingdom Animalia and Kingdom Plantae to complete a phylogenetic tree. TEKS 2F, 2G, 2H, 8C
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in The Six Kingdom Classification System unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is necessary in order to compare characteristics of taxonomic groups, including archaebacteria, protists, fungi, plants, and animals. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – The Six Kingdoms – *TEKS 2G, 2H, 8C*
Offline Activities	What's in the Water? – *TEKS 1A, 1B, 2E, 2F, 2G, 2H, 8C* *Students work in collaborative groups to design a descriptive investigation that involves identifying protists present in samples of water collected from a designated field site.*

Unit: Biomolecules

Concepts *TEKS: 9A*

Lesson Components	Descriptions

Instruction Module	In this Instruction Module, students learn that biomolecules are large molecules synthesized by living things. They learn that there are four classes of biomolecules, namely proteins, carbohydrates, lipids, and nucleic acids. They learn about the structure and functions of these biomolecules and learn to compare and contrast their structures and functions.
Interactivity	In the **Biomolecules on My Table**, students apply their understanding of biomolecules to identify the kinds of biomolecules present in different foods. TEKS 2F, 2G, 9A
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Biomolecules unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is necessary in order to compare characteristics of taxonomic groups, including archaebacteria, protists, fungi, plants, and animals. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal 1– Biomolecules – *TEKS 2G, 2H, 9A* Journal 2- Biomolecules – *TEKS 2G, 2H, 9A*
Offline Activities	Bio match – *TEKS 2F, 2G, 2H, 9A* *In this activity, students apply their knowledge of the structure and function of biomolecules to identify images of biomolecules and match them to their descriptions.*

Unit: Photosynthesis and Cellular Respiration

Concepts *TEKS: 9B*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students learn that photosynthesis and cellular respiration are complex and important life processes. They learn about the different steps in these processes and compare them in terms of their reactants, products, and energy usage.
Interactivity	In the **Photosynthesis and Cellular Respiration** Interactivity, students apply their understanding of the relationship between photosynthesis and cellular respiration to complete a schematic diagram showing the relationship between the two. TEKS 2F, 2G, 2H, 9B
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Photosynthesis and Cellular Respiration unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is necessary in order to compare the reactants and products of photosynthesis and cellular respiration in terms of energy and matter. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Photosynthesis and Cellular Respiration – *TEKS 2G, 2H, 9B*

Unit: Enzymes

Concepts *TEKS: 9C*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students learn that enzymes are biological catalysts that speed up biochemical reactions. They learn how enzymes work to speed up reactions. They also learn to analyze and evaluate the effects of different environmental factors such as temperature and pH, and of chemicals such as cofactors and inhibitors, on enzyme activity.
Interactivity	In the **EnzyMatix** Interactivity, students apply their understanding of how enzymes work to identify indicated components of different enzyme catalyzed reactions. TEKS 2F, 2G, 2H, 9C
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Enzymes unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is necessary in order to identify and describe the role of enzymes. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal 1 – Enzymes – *TEKS 2F, 2G, 2H, 9C* Journal 2 – Enzymes - *TEKS 2F, 2G, 2H, 9C*

Offline Activity	Temperature's Effect on Enzyme-Catalyzed Reactions – *TEKS 1A, B, 2E, 2F, 2G, 2H, 9C* *Students work in collaborative groups to plan and implement an experimental investigation to determine the effect of temperature change on the rate of an enzyme-catalyzed reaction.*

Unit: Origin of Biomolecules

Concepts *TEKS: 9D*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students are introduced to the theory of abiogenesis, which can be used to explain the evolution of life on earth. They learn about the formation of simple organic molecules and their organization into long complex molecules, which eventually aggregate to form the first cell-like structures. They also analyze and evaluate the four postulates of the abiogenesis theory.
Interactivity	In **the Origin of Life** interactivity, students apply knowledge of the theory of abiogenesis to sequence the events that are thought to have led to the origin of life on Earth. TEKS 2F, 2G, 2H, 9D
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Origin of Biomolecules unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is necessary in order to analyze and evaluate the evidence regarding formation of simple organic molecules. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.

Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Origin of Biomolecules – *TEKS 2G, 2H, 9D* Journal – Origin of Biomolecules: Theories vs. Hypotheses – *TEKS 2G, 2H, 9D*

Unit: Biological Systems

Concepts *TEKS: 10A, B, C*

Lesson Components	Descriptions
Instruction Module	**Structural Hierarchy in Biological Systems**: In this Instruction Module, students are introduced to the various levels of organization in living systems including cell, tissue, organ, organ system, and organism. They identify and describe the interactions between the systems involved in regulation, nutrient absorption, reproduction, and defense in animals. They identify and describe the interactions between the systems involved in transport, reproduction, and responses in plants.
Interactivity	In the **Organ Systems Interactivity**, students identify the different organ systems that interact to perform a specific function. TEKS 2F, 2G, 2H, 10A, B, C
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Structural Hierarchy in Biological Systems unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.

Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is necessary to describe interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals, and functions of transport, reproduction, and response in plants; and to information that is necessary to analyze the levels of organization in biological systems, to relate the levels to each other and to the whole system. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Structural Hierarchy in Biological Systems – *TEKS 2G, 2H, 10A, B, C*
Offline Activity	Interaction of Transport and Response Systems in Plants – *TEKS 1A, B, 2A, 2B, 2E, 2F, 2G, 2H, 10A, B, C* Students plan and implement a comparative investigation to determine how plant systems interact when exposed to certain stimuli.
Offline Activity	Organ System Interactions in Animal Reproduction – *TEKS 2F, 2G, 2H, 10A, B, C* In this student activity, students use information from the Instruction Module to describe the interactions that occur among organ systems in animals that aid reproduction.
Offline Activity	Full Body Medical Scans – *TEKS 2F, 2G, 2H, 3A, 3B, 3C, 3D, 10A, B, C* In this activity, students conduct basic research the pros and con of the promotion of full body CT scans as a preventative medical service.
Offline Activity	Organ System Interactions Research Project – *TEKS 2F, 2G, 2H, 3B, 10A, B, C* *Students research an animal that is oviparous and use the information gained to describe how the interactions of systems involved in animal reproduction in egg-laying animals differ from those in animals that give birth to live young ones.*

Unit: Feedback Mechanisms and Homeostasis

Concepts *TEKS: 11A*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students learn how internal feedback mechanisms, such as negative and positive feedback mechanisms help to maintain homeostasis. They also learn to compare and contrast negative and positive feedback mechanisms.
Interactivity	In the **Balance the Blood Sugar!** Interactivity, students identify how the negative feedback mechanism responsible for maintaining normal blood sugar levels, responds to elevated and decreased sugar levels in the blood. TEKS 2F, 2G, 2H, 11A
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Feedback Mechanisms and Homeostasis unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is necessary in order to describe the role of internal feedback mechanisms in the maintenance of homeostasis. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal 1- Feedback Mechanisms and Homeostasis – *TEKS 2G, 2H, 11A* Journal 2 - Feedback Mechanisms and Homeostasis – *TEKS 2G, 2H, 11A*

Offline Activity	Homeostasis: A Descriptive Investigation – *TEKS 1A, 1B, 2B, 2E, 2F, 2G, 2H, 11A* *In this activity, students plan and implement a descriptive investigation to determine how a runner's respiratory system (breathing) and circulatory system (heart rate) work together to regulate and maintain homeostasis.*

Unit: Population and Community Ecology

Concepts *TEKS: 11B*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module students analyze and evaluate how population sizes are limited by different abiotic and biotic factors.
Simulation	In the **Pond Watch** Simulation, students explore how changing the biotic and abiotic factors affects populations in the ecosystem. Students observe, identify, manipulate and record the effects on a pond ecosystem of varying both of abiotic and biotic limiting factors. TEKS 2E, 2F, 2G, 2H, 11B
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Population and Community Ecology unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is necessary in order to investigate and analyze how organisms, populations, and communities respond to external factors. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.

Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Population and Community Ecology – *TEKS 2F, 2G, 2H, 11B*

Unit: Microorganisms and the Environment

Concepts *TEKS: 11C*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students recognize the role of microorganisms in maintaining ecosystem stability. They learn about decomposition, nutrient cycling, and symbiosis. They also learn to describe how microorganisms can cause disruptive changes in both individual organisms and ecosystems.
Interactivity	In the **Microbial Colonies in You!** Interactivity, students identify the different parts of the human body that are normally inhabited by microorganisms. TEKS 2G, 2H, 11C
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Microorganisms and the Environment unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is necessary in order to summarize the role of microorganisms in maintaining and disrupting the health of organisms and ecosystems. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.

Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Microorganisms and the Environment – *TEKS 2G, 2H, 3A, 11C*
Offline Activity	Using Critical Thinking to Make Inferences – *TEKS 2F, 2G, 2H, 3A, 3C, 11C* Students will draw inferences based on data related to promotional materials for products.

Unit: Ecological Succession

Concepts *TEKS: 11D*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students are introduced to the key concepts of ecological succession, namely, primary succession, secondary succession, and climax community. They understand and describe how primary and secondary succession can alter ecosystems.
Interactivity	In the **What Came First?** Interactivity, students select various species to colonize an area destroyed by a forest fire and observe the stages of ecological succession. TEKS 2F, 2G, 2H, 11D
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Ecological Succession unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.

Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is necessary in order to describe how events that occur during ecological succession can change populations. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Ecological Succession – *TEKS 2F, 2G, 2H, 11D*

Unit: Interdependence Among Organisms

Concepts *TEKS: 12A*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students learn that organisms interact with one another for various resources. They learn that interactions between two organisms in an ecosystem can either be competitive or symbiotic. They learn that symbiotic interactions include commensalism, mutualism and parasitism. They also learn to identify which organism is benefited, harmed, or remains unaffected in each type of interaction.
Interactivity	In the **Interactions** Interactivity, students apply their understanding of the interactions between organisms to identify the different types of interactions. They also recognize the effects of the interactions on each of the organisms. TEKS 2F, 2G, 2H, 12A
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Interdependence Among Organisms unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.

Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is necessary in order to interpret and describe relationships, including predation, parasitism, commensalism, mutualism, and competition among organisms. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Interdependence Among Organisms – *TEKS 2F, 2G, 2H, 12A*

Unit: Biological Adaptations and Survival

Concepts *TEKS: 12B*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students understand that adaptations are traits that help organisms survive in their environments and that adaptations can be structural, physiological, or behavioral. They learn to describe the adaptations of organisms living in different kinds of environments.
Simulation	In the **Effects of Fur Color on Marmot Survival** Simulation, students explore the effects of fur color on marmot survival. TEKS 2B, 2E, 2F, 2G, 2H, 12B
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Biological Adaptations and Survival unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.

Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is necessary in order to compare variations and adaptations of organisms in different ecosystems. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Biological Adaptations and Survival – *TEKS 2G, 2H, 12B*

Unit: Energy Flow in the Living World

Concepts *TEKS: 12C*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students learn that organisms in an ecosystem depend on each other for nutrients and energy. They analyze and evaluate the energy relationships between different organisms in an ecosystem using food chains, food webs, and energy pyramids. They also learn that although matter can be recycled between the different components of an ecosystem, the flow of energy is unidirectional.
Interactivity	In the **Marine Energy Pyramid** Interactivity, students identify the different levels of an energy pyramid for a marine ecosystem. They also identify the organisms that occupy each level in the energy pyramid, from a given list of organisms. TEKS 2E 2G, 2H, 12C
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Energy Flow in the Living World unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.

Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is necessary in order to analyze and explain the flow of matter and energy through trophic levels using various models, including food chains, food webs, and ecological pyramids. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Energy Flow in the Living World – *TEKS 2F, 2G, 2H, 12C*
Offline Activity	Energy Pyramid – *TEKS 2F, 2G, 2H, 3B, 3D, 3E, 3F, 12C* *In this activity, students use the terms provided to complete a graphic of an energy pyramid model while analyzing the flow of energy through the different tropic levels of an ecological pyramid.*

Unit: Resources and Survival

Concepts *TEKS: 12D*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students learn about limiting factors or resources that are scarce, and understand how limiting factors affect population sizes of organisms in different ecosystems. They also learn to analyze and evaluate how human activity can cause changes in ecosystems and impact biotic and abiotic resources.
Interactivity	In the **Pesticide Pond** Interactivity, students apply their understanding of the factors affecting population sizes of different organisms to identify the effects of pesticides on the populations of organisms in a pond ecosystem. TEKS 2F, 2G, 2H, 12D
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Resources and Survival unit.

Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is necessary in order to recognize that long-term survival of species is dependent on changing resource bases that are limited. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal 1 – Resources and Survival – *TEKS 2G, 2H, 12D* Journal 2 – Resources and Survival – *TEKS 2G, 2H, 12D*

Unit: Nutrient Cycling in the Environment

Concepts *TEKS: 12E*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students understand the importance of nutrient cycling. They learn about the nitrogen and carbon cycles, which describe how nutrients such as nitrogen and carbon are cycled through the environment. They learn to explain the consequences of disrupting these cycles.
Interactivity	In the **Nitrogen Cycle** interactivity, students identify the factors that are involved in the different stages of the nitrogen cycle.
Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Nutrient Cycling in the Environment unit.

Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is necessary in order to describe the flow of matter through the carbon and nitrogen cycles and to explain the consequences of disrupting these cycles. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Nutrient Cycling in the Environment – *2G, 2H, 12E*
Offline Activity	Nutrient Cycling and the Environment Experimental Investigation – *TEKS 1A, 1B, 2E, 2F, 2G, 2H, 12E* *Students apply process skills and knowledge of the nutrient cycles to plan and implement an experimental investigation. Students investigate how to best prevent the consequences from excess nutrients entering water ecosystems when artificial fertilizer is added to soil for growing crops.*

Unit: Ecological Balance

Concepts *TEKS: 12F*

Lesson Components	Descriptions
Instruction Module	In this Instruction Module, students understand how the interactions between biotic and abiotic components can lead to stability within an ecosystem. They describe how environmental changes can affect ecosystem stability.
Interactivity	In **The Water Works!** interactivity, students identify the ecological impacts of different types of water resource facilities. TEKS 2G, 2H, 12F

Quiz	This formative assessment is aligned to the content presented in the unit. It provides a set of multiple choice questions to use as checks-for-understanding of the concepts presented in the Ecological Balance unit.
Glossary	The Glossary contains terms and definitions essential for mastery of the concepts presented in the Instruction Module. The integration of text, audio, and still and animated graphics provides both linguistic and non-linguistic representations of essential terms to help build vocabulary comprehension for better retention.
Note-taking Guide	The Note-taking Guide is used with the Instruction Module to focus students' attention on information that is necessary in order to describe how environmental change can impact ecosystem stability. When complete, this can be used as a study guide by the students and as an assessment instrument by teachers.
Journal Entry	The journal activity requires students to apply what they've learned and to justify their reasoning as they respond to targeted, open-ended questions and prompts. Journal – Ecological Balance – *TEKS 2G, 2H, 12F*
Offline Activity	Gaia Hypothesis: Impact of Scientific Research – *TEKS 2B, 2F, 2G, 2H, 3A, 3B, 3D, 3F, 12F* *In this activity, students research the Gaia Hypothesis and evaluate the impact of this scientific research on society and the environment.*

** Scientific Investigation and Reasoning or Scientific Processes are addressed in context through the concepts TEKS content.