HS Biology Quarter 1 Overview

Focus Standards	**RST:** 3, 5; **WST:** 2, 3; **SL:** 1
Recursive Standards	**RST:** 1, 2, 4, 6, 7, 8, 9, 10; **WST:** 1, 4-9; **SL:** 2-6
Quarter Topic Focus	***Energy***

Science & Engineering Practice (SEP)	Disciplinary Core Ideas (DCI)	Cross Cutting Concepts (CCC)	Performance Expectations
How students will demo understanding.	*What students will understand.*	*How students will connect their understanding across units.*	PEs from past Scope & Sequence.
Develop a model to illustrate how…	photosynthesis transforms light energy into stored chemical energy. (LS1.C) Connected DCI PS1.B, PS3.B	Energy & Matter Changes of energy & matter in a system can be described in terms of energy and matter flows into, and out of, and within that system.	HS-LS1-5 Evidence Statements
Develop a Model to illustrate…	the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere (LS2.B, PS3.D) Connected DCI PS1.B, ESS2.D	Systems and System Models: Models (physical, mathematical, computer) can be used to simulate systems and interactions-including energy, matter, and information flows-within and between systems at different scales.	HS-LS2-5 Evidence Statements
Use a model to illustrate that…	cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy. (LS1.C) Connected DCI PS1.B, 2.B, 3.B	Energy & Matter Energy cannot be created or destroyed-it only moves between one place and another place, between objects and/or fields, or between systems.	HS-LS1-7 Evidence Statements
Construct and revise an explanation based on evidence for how…	carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules. (LS1.C) Connected DCI PS1.B	Energy & Matter Changes of energy & matter in a system can be described in terms of energy and matter flows into, and out of, and within that system.	HS-LS1-6 Evidence Statements CCSS Lit Connection: RST.11-12.1, WHST9-12.2, 5 & 9
Construct and revise an explanation based on evidence for the…	cycling of matter and flow of energy in aerobic and anaerobic conditions. (LS2.B) Connected DCI PS1.B, 3.B, 3.D, ESS2.A	Energy & Matter Energy drives the cycling of matter within and between systems.	HS-LS2-3 Evidence Statements CCSS Lit Connection: RST.11-12.1, WHST9-12.5
Use mathematical representations to support claims for…	the cycling of matter and flow of energy among organisms in an ecosystem. (LS2.B) Connected DCI PS3.B, 3.D	Energy & Matter Energy cannot be created or destroyed-it only moves between one place and another place, between objects and/or fields, or between systems.	HS-LS2-4 Evidence Statements

HS Biology Quarter 2 Overview

Focus Standards	**RST:** 4, 6; **WST:** 1; **SL:** 3, 4
Recursive Standards	**RST:** 1, 2, 3, 5, 7, 8, 9, 10; **WST:** 2-10; **SL:** 1, 2, 5, 6
Quarter Topic Focus	***Information***

Science & Engineering Practice (SEP)	**Disciplinary Core Ideas (DCI)**	**Cross Cutting Concepts (CCC)**	**Performance Expectations**
How students will demonstrate understanding.	*What students will understand.*	*How students will connect their understanding across units.*	PEs from past Scope & Sequence.
Apply concepts of statistics and probability to explain the…	variation and distribution of expressed traits in a population. (LS3.B) Connected DCI LS2.A, S.C, 4.B, 4.C	Scale Proportion, and Quantity Algebraic thinking is used to examine scientific data and predict the effect of a change in one variable on another (e.g., linear growth vs. exponential growth).	HS-LS3-3 Evidence Statements
Ask questions to clarify relationships about the…	role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring. (LS1.A, LS3.A)	Cause and Effect Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.	HS-LS3-1 Evidence Statements CCSS Lit Connection: RST.11-12.1, & 9
Use a model to illustrate the role of…	cellular division (mitosis) and differentiation in producing and maintaining complex organisms. (LS1.B)	Systems and System Models: Models (physical, mathematical, computer) can be used to simulate systems and interactions-including energy, matter, and information flows-within and between systems at different scales.	HS-LS1-4 Evidence Statements
Make and defend a claim based on evidence that…	inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors. (LS3.B)	Cause and Effect Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.	HS-LS3-2 Evidence Statements CCSS Lit Connection: RST.11-12.1, WHST9-12.1
Construct an explanation based on evidence for how…	the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells. (LS1.A) Connected DCI LS3.A	Structure and Function Investigating or designing new systems or structures requires a detailed examination of the properties of different materials, the structures of different components, and connections of components to reveal its function and/or solve a problem.	HS-LS1-1 Evidence Statements CCSS Lit Connection: RST.11-12.1, WHST9-12.2 & 9

HS Biology Quarter 3 Overview

Focus Standards **RST:** 2, 7; **WST:** 2; **SL:** 2, 5

Recursive Standards **RST:** 1, 3, 5, 6, 8, 9, 10; **WST:** 1, 3-10; **SL:** 1, 3, 4, 6

Quarter Topic Focus ***Evolution***

Science & Engineering Practice (SEP)	**Disciplinary Core Ideas (DCI)**	**Cross Cutting Concepts (CCC)**	**Performance Expectations**
How students will demonstrate understanding.	*What students will understand.*	*How students will connect their understanding across units.*	PEs from past Scope & Sequence.
Communicate scientific information that…	common ancestry and biological evolution are supported by multiple lines of empirical evidence. (LS4.A) Connected DCI LS3.A, 3.B, ESS1.C	Patterns Different patterns may be observed at each of the scales at which a system is studied and can provide evidence for causality in explanations of phenomena.	HS-LS4-1 Evidence Statements CCSS Lit Connection: RST.11-12.1, WHST9-12.2 & 9
Construct an explanation based on evidence that…	that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment. (LS4.B, 4.C) Connected DCI LS2.A, 2.D, 3.B, ESS2.E, 3.A	Cause and Effect Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.	HS-LS4-2 Evidence Statements CCSS Lit Connection: RST.11-12.1, WHST9-12.2 & 9
Apply Concepts of statistics and probability to support explanations that…	organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait. (LS4.B, 4.C) Connected DCI LS4.A, 2.D, 3.B	Patterns Different patterns may be observed at each of the scales at which a system is studied and can provide evidence for causality in explanations of phenomena.	HS-LS4-3 Evidence Statements CCSS Lit Connection: RST.11-12.1, WHST9-12.2 & 9
Construct an explanation based on evidence for how…	natural selection leads to adaptation of populations. (LS4.C) (Continued on reverse)	Cause and Effect Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.	HS-LS4-4 Evidence Statements CCSS Lit Connection: RST.11-12.1, WHST9-12.2 & 9

Evaluate the evidence supporting claims that…	claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species. (LS4.C) Connected DCI LS2.A, 2.C, 3.B, ESS2.E, 3.A	Cause and Effect Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.	HS-LS4-5 Evidence Statements CCSS Lit Connection: RST.11-12.8, WHST9-12.9
Evaluate the evidence for…	the role of group behavior on individual and species' chances to survive and reproduce. (LS2.D)	Cause and Effect Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.	HS-LS2-8 Evidence Statements CCSS Lit Connection: RST.9-10.8, WHST11-12.1, 7 & 8

HS Biology Quarter 4 Overview

Focus Standards **RST:** 8, 9; **WST:** 1; **SL:** 2, 5

Recursive Standards **RST:** 1-7, 10; **WST:** 2-10; **SL:** 1, 3, 4, 6

Quarter Topic Focus ***Ecosystems***

Science & Engineering Practice (SEP)	**Disciplinary Core Ideas (DCI)**	**Cross Cutting Concepts (CCC)**	**Performance Expectations**
How students will demonstrate understanding.	*What students will understand.*	*How students will connect their understanding across units.*	PEs from past Scope & Sequence.
Use mathematical and/or computational representations to support explanations of…	factors that affect carrying capacity of ecosystems at different scales. (LS2.A)	Scale, Proportion, and Quantity The significance of a phenomenon is dependent on the scale, proportion, and quantity at which it occurs.	HS-LS2-1 Evidence Statements CCSS Lit Connection: RST.11-12.1, WHST9-12.2
Use mathematical representations to support and revise explanations based on evidence about…	factors affecting biodiversity and populations in ecosystems of different scales. (LS2.A, 2.C)	Scale, Proportion, and Quantity Using the concept of orders of magnitude allows one to understand how a model at one scale relates to a model at another scale.	HS-LS2-2 Evidence Statements CCSS Lit Connection: RST.11-12.1, WHST9-12.2
Evaluate the claims, evidence, and reasoning that…	the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem. (LS2.C) Connected DCI ESS2.E	Stability & Change Much of science deals with constructing explanations of how things change and how they remain stable.	HS-LS2-6 Evidence Statements CCSS Lit Connection: RST.9-10.8, WHST11-12.1, 7 & 8
Design, evaluate, and refine a solution for…	reducing the impacts of human activities on the environment and biodiversity. (LS2.C, 4.D, ETS1.B) Connected DCI ESS2.D, 2.E, 3.A, 3.C	Stability & Change Much of science deals with constructing explanations of how things change and how they remain stable.	HS-LS2-7 Evidence Statements CCSS Lit Connection: RST.9-10.8, 11-12.7, 8 WHST9-12.7
Develop and use a model to illustrate…	the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. (LS1.A) (Continued on reverse)	Systems and System Models: Models (physical, mathematical, computer) can be used to simulate systems and interactions-including energy, matter, and information flows-within and between systems at different scales.	HS-LS1-2 Evidence Statements

Plan and conduct and investigation to provide evidence that…	feedback mechanisms maintain homeostasis. (LS1.A)	Stability & Change Feedback (negative and positive) can stabilize or destabilize a system.	HS-LS1-3 Evidence Statements CCSS Lit Connection: WHST9-12.7 11-12.8
Positive Prevention Plus curriculum lessons should be taught consecutively but may be spread out throughout the year at the discretion of school sites.			