HS Chemistry 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	***Matter***

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.
Use the Periodic Table as a model to predict…	the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms. (PS1.A) Connected DCI LS1.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-PS1-1 Evidence Statements CCSS Lit Connection: RST.9-10.7
Construct and revise an explanation for…	the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties (PS1.A, PS1.B) Connected DCI LS1.C, ESS2.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-PS1-2 Evidence Statements CCSS Lit Connection: WHST9-12.2, WHST9-12.5
Plan and conduct an investigation to…	gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles. (PS1.A) Connected DCI ESS2.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-PS1-3 Evidence Statements CCSS Lit Connection: RST.11-12.1,WHST.9-12.7 & WHST.11-12.8
Communicate scientific and technical information about…	why the molecular-level structure is important in the functioning of designed materials. (PS2.B)	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-PS2-6 Evidence Statements CCSS Lit Connection: RST.11-12.1, WHST9-12.2
Develop models to illustrate…	the changes in the composition of the nucleus of an atom and the energy released during the processes of fission, fusion, and radioactive decay. (PS1.C) Connected DCI PS3.A, 3.B, 3.C, 3.D, ESS1.C, 3.A, 3.C	Energy & Matter In nuclear processes, atoms are not conserved, but the total number of protons plus neutrons is conserved.	HS-PS1-8 Evidence Statements

PEs marked with an * were not present in previous Scope & Sequence documents

HS Chemistry 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 ***Reactions***

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.
Develop a model to illustrate that…	the release or absorption of energy from a chemical reaction system depends on the changes in total bond energy. (PS1.A, PS1.B)	Energy & Matter Changes of energy and matter in a system can be described in terms of energy and matter flows into, out of, and within that system.	HS-PS1-4 Evidence Statements
Use mathematical representations to support the claim that…	atoms, and therefore mass, are conserved during a chemical reaction. (PS1.B) Connected DCI LS1.C, 2.B, PS3.B	Energy & Matter The total amount of energy and matter in closed systems is conserved.	HS-PS1-7 Evidence Statements
Apply scientific principals and evidence to provide an explanation about…	the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs. (PS1.B) Connected DCI PS3.A	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-PS1-5 Evidence Statements
Refine the design of…	a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium. (PS1.B, ETS1.C) Connected DCI PS3.B	Stability & Change Much of science deals with constructing explanations of how things change and how they remain stable.	HS-PS1-6 Evidence Statements CCSS Lit Connection: WHST.9-12.7

PEs marked with an * were not present in previous Scope & Sequence documents

HS Chemistry 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 ***Energy***

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.
Create a computational model to calculate…	the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known. (PS3.A, PS3.B)	Systems and System Models Models can be used to predict the behavior of a system, but these predictions have limited precision and reliability due to the assumptions and approximations inherent in models.	HS-PS3-1 Evidence Statements
Plan and conduct an investigation to provide evidence that…	the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics). (PS3.B, PS3.D) Connected DCI ESS2.A	Systems and System Models Models can be used to predict the behavior of a system, but these predictions have limited precision and reliability due to the assumptions and approximations inherent in models.	HS-PS3-4 Evidence Statements CCSS Lit Connection: RST.11-12.1, WHST9-12.7, 8, 9
Evaluate competing design solutions for…	developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios. (ESS3.A, ETS1.B) Connected DCI PS3.B, 3.D, LS2.A, 2.B, 4.D, ESS2.A	Influence of Science, Engineering, and Technology on society and the Natural World Engineers continuously modify these technological systems by applying scientific knowledge and engineering design practices to increase benefits while decreasing costs and risks.	HS-ESS3-2 Evidence Statements CCSS Lit Connection: RST.11-12.1, & 8
Use a model to describe how…	variations in the flow of energy into and out of Earth's systems result in changes in climate. (ESS1.B, ESS2.A, ESS2.D)	Cause and Effect Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.	HS-ESS2-4 Evidence Statements CCSS Lit Connection: RST.11-12.1, & 8
Develop a model based on evidence of the…	Earth's interior to describe the cycling of matter by thermal convection. (ESS2.A, ESS2.B, PS4.A) Connected DCI PS2.B, 3.B, 3.D	Energy & Matter Energy drives the cycling of matter within and between systems.	HS-ESS2-3* Evidence Statements CCSS Lit Connection: RST.11-12.1

PEs marked with an * were not present in previous Scope & Sequence documents

HS Chemistry 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 ***Earth Systems***

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.
Plan and conduct an investigation of…	the properties of water and its effects of Earth materials and surface processes. (ESS2.C) Connected DCI PS1.A, 1.B, 3.B, ESS3.C	Structure and Function The functions and properties of natural and designed objects and systems can be inferred from their overall structure, the way their components are shaped and used, and the molecular substructures of its various materials.	HS-ESS2-5 Evidence Statements CCSS Lit Connection: WHST9-12.7
Develop a quantitative model to describe the…	cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere. (ESS2.D) Connected DCI PS1.A, 1.B, 3.D, LS1.C, 2.B, ESS3.C, 3.D	Energy & Matter The total amount of energy and matter in closed systems is conserved.	HS-ESS2-6 Evidence Statements
Analyze geoscience data and the results from global climate models to make an evidence based forecast of…	the current rate of global or regional climate change and associated future impacts to Earth systems. (ESS3.D) Connected DCI PS3.B, 3.D, LS1.C, ESS2.D	Stability & Change Change and rates of change can be quantified and modeled over very short or very long time. Some system changes are irreversible.	HS-ESS3-5 Evidence Statements CCSS Lit Connection: RST.11-12.1, 2, & 7
Use a computational representation to illustrate…	the relationship among Earth systems and how those relationships are being modified due to human activity. (ESS2.D, ESS3.D) Connected DCI LS2.B, 2.C, 4.D, ESS2.A	Systems and System Models: When investigating or describing a system, the boundaries and initial conditions of the system need to be defined and their inputs and outputs analyzed and described using models.	HS-ESS3-6 Evidence Statements
Analyze geoscience data to make the claim that…	one change to Earth's surface can create feedbacks that cause changes to other Earth systems. (ESS2.A, ESS2.D) Connected DCI PS3.B, 4.B, LS2.B, 2.C, 4.D, ESS3.C, 3.D	Stability & Change Feedback (negative or positive) can stabilize or destabilize a system.	HS-ESS2-2* Evidence Statements CCSS Lit Connection: RST.11-12.1, 2

PEs marked with an * were not present in previous Scope & Sequence documents