Chemistry Lab Series 2 – Alignment

Redox

Performance Expectations

HS-PS1-2: 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.

Science and Engineering Practices

Asking questions and defining problems
Planning Investigations
Engaging in Argument from Evidence
Obtaining, Evaluating, and Communicating Information

Crosscutting Concepts

Cause and effect
Systems and system models

Electrochemistry

Performance Expectations

HS-PS1-2: 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.

Science and Engineering Practices

Asking questions and defining problems
Planning Investigations
Engaging in Argument from Evidence
Obtaining, Evaluating, and Communicating Information

Crosscutting Concepts

Cause and effect
Systems and system models

Kinetics

Performance Expectations

HS-PS1-5: Apply scientific principles 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.
HS-PS1-7: Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.

Science and Engineering Practices

Asking questions and defining problems
Planning and carrying out investigations
Analyzing and interpreting data
Using mathematics and computational thinking

Crosscutting Concepts

Cause and Effects
Systems and System Models
Energy and Matter
Patterns

Chemical Equilibrium

Performance Expectations

HS-PS1-6: Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium.

Science and Engineering Practices

Analyzing and interpreting data
Using mathematics and computational thinking
Constructing Explanations
Developing Models

Crosscutting concepts

Patterns
Systems and system models

Acids and Bases

Performance Expectations

HS-PS1-1: 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.

Science and Engineering Practices

Analyzing and interpreting data
Engaging in Argument from Evidence
Constructing Explanations
Developing Models

Crosscutting Concepts

Patterns
Scale, proportion, and quantity

Radioactivity

HS-PS1-1: 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.

Science and Engineering Practices

Asking questions and defining problems
Planning and carrying out investigations
Analyzing and Interpreting Data
Constructing Explanations

Crosscutting Concepts

Patterns

Organic Chemistry

Performance Expectations

HS-PS1-2: 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.

Science and Engineering Practices

Asking questions and defining problems
Planning and carrying out investigations
Analyzing and Interpreting Data
Constructing Explanations

Crosscutting Concepts

Patterns

Green Chemistry

Performance Expectations

HS-PS1-5: Apply scientific principles 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.
HS-PS1-7: Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.

Science and Engineering Practices

Asking questions and defining problems
Planning and carrying out investigations
Analyzing and interpreting data
Using mathematics and computational thinking

Crosscutting Concepts

Cause and Effects
Systems and System Models
Energy and Matter
Patterns

Polymers

Performance Expectations

HS-PS1-3: 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.

Science and Engineering Practices

Analyzing and interpreting data
Engaging in Argument from Evidence
Constructing Explanations
Developing and Using Models

Crosscutting Concepts

Patterns
Cause and Effect
Structure and Function

Advanced Materials

Performance Expectations

HS-PS1-3: 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.

Science and Engineering Practices

Analyzing and interpreting data
Engaging in Argument from Evidence
Constructing Explanations
Developing and Using Models

Crosscutting Concepts

Patterns
Cause and Effect
Structure and Function