

## Curriculum Map

### 1<sup>st</sup> 9 Weeks Formal Assessments

#### 1. Unit 1 Test (Phases of Matter, Phase Changes, & Gas Laws – 18 DAYS)

##### a. Student Goals:

- i. Students will use a model to identify particle arrangement and motion in solids.
- ii. Students will use a model to identify particle arrangement and motion in liquids.
- iii. Students will use a model to identify particle arrangement and motion in gasses.
- iv. Students will use a model to identify particle arrangement and motion in plasmas
- v. Students will compare and contrast models depicting the particle arrangement and motion in solids, liquids, gasses, and plasmas.
- vi. Students will ask questions to compare and contrast models depicting the particle arrangement and motion in solids, liquids, gasses, and plasmas.
- vii. Students will refine questions to analyze models depicting the particle arrangement and motion in solids, liquids, gasses, and plasmas.
- viii. Students will recognize that the flow of energy changes during phase change.
- ix. Students will explain the flow of energy during specific phase changes.
- x. Students will recognize that relationships exist among temperature, pressure, volume, and density of gasses in closed systems.
- xi. Students will carry out investigations to identify the relationships among temperature, pressure, volume, and density of gasses in closed systems.
- xii. Students will plan and carry out investigations to identify the relationships among temperature, pressure, volume, and density of gasses in closed systems.
- xiii. Students will communicate findings from investigations to identify the relationships among temperature, pressure, volume, and density of gasses in closed systems.

**STANDARDS ON Unit 1 Test**

<b>Chemistry: Atomic and Nuclear Theory and the Periodic Table</b>	<b>Chemistry: Chemical Reactions and Properties of Matter</b>	<b>Physics: Energy, Force and Motion</b>	<b>Physics: Waves, Electricity, Magnetism, and Nuclear</b>
	<b>SPS5a</b>		
	<b>SPS5b</b>		
	<b>SPS7d</b>		

**2. Unit 2 Test (Atomic Structure & Periodic Table – 18 DAYS)****a. Student Goals:**

- i. Students will identify the structural components of atoms, ions, and isotopes.
- ii. Students will recognize models that show the differences between atoms, ions and isotopes.
- iii. Students will develop and use models to compare and contrast the structure of atoms, ions and isotopes. (Bohr models)
- iv. Students will identify and label the components of an element square on the periodic table.
- v. Students will use the information on the periodic table to calculate the protons, neutrons, and electrons of an atom.
- vi. Students will determine the charge and location of subatomic particles.
- vii. Students will determine the energy levels for electrons.
- viii. Students will justify models to compare and contrast the structure of atoms, ions and isotopes.
- ix. Students will analyze and interpret data to determine the number of valence electrons.
- x. Students will analyze and interpret data to determine the types of ions formed by main group elements.
- xi. Students will analyze and interpret data to determine the location and properties of metals, nonmetals, and metalloids.
- xii. Students will analyze and interpret data to determine the phases at room temperature.
- xiii. Students will use the Periodic Table as a model to predict the properties of main group elements.

**STANDARDS ON Unit 2 Test**

<b>Chemistry: Atomic and Nuclear Theory and the Periodic Table</b>	<b>Chemistry: Chemical Reactions and Properties of Matter</b>	<b>Physics: Energy, Force and Motion</b>	<b>Physics: Waves, Electricity, Magnetism, and Nuclear</b>
<b>SPS1a</b>			
<b>SPS1b</b>			
<b>SPS1c</b>			

**2nd 9 Weeks Formal Assessments**

**3. Unit 3 Test (Chemical Bonding – 18 DAYS)**

**a. Student Goals:**

- i. Students will use elemental composition data to recognize the difference between ionic and covalent bonds
- ii. Students will recognize differences between ionic and covalent bonds based on properties such as melting point, boiling point, and conductivity.
- iii. Students will analyze and interpret data to predict properties of ionic and covalent bonds based on elemental composition.
- iv. Students will analyze and interpret data to predict properties of ionic and covalent bonds, such as melting point, boiling point, and conductivity.
- v. Students will use evidence from data to compare elemental composition of ionic and covalent compounds.
- vi. Students will use evidence from data to compare properties of ionic and covalent compounds, such as melting point, boiling point, and conductivity.
- vii. Students will write formulas for stable, ionic compounds based on balance of charges.
- viii. Students will develop and use models to predict formulas for stable, binary compounds based on balance of charges.
- ix. Students will refine models to predict formulas for stable, binary ionic compounds based on balance of charges.

- x. Students will identify the names of simple chemicals using the International Union of Pure and Applied Chemistry (IUPAC) nomenclature.
- xi. Students will translate between simple binary chemical names and chemical formulas using the International Union of Pure and Applied Chemistry (IUPAC) nomenclature.
- xii. Students will translate between complex binary chemical formulas using the international Union of Pure and Applied Chemistry (IUPAC) nomenclature.
- xiii. Students will use the information on the periodic table to calculate the protons, neutrons and electrons of an atom.

**STANDARDS ON Unit 3 Test**

<b>Chemistry: Atomic and Nuclear Theory and the Periodic Table</b>	<b>Chemistry: Chemical Reactions and Properties of Matter</b>	<b>Physics: Energy, Force and Motion</b>	<b>Physics: Waves, Electricity, Magnetism, and Nuclear</b>
	<b>SPS1a</b>		
	<b>SPS2a</b>		
	<b>SPS2b</b>		
	<b>SPS2c</b>		

**4. Unit 4 Test (Chemical Reactions – 11 DAYS)****a. Student Goals:**

- i. Students will apply the Law of Conservation of Matter by balancing the following types of chemical equations: synthesis, decomposition, single replacement, double replacement.
- ii. Students will demonstrate the Law of Conservation of Matter in a chemical reaction.
- iii. Students will provide evidence to the claim that mass is conserved during a chemical reaction.
- iv. Students will define and illustrate Ionic and Covalent bonds.
- v. Students will demonstrate that matter is conserved in a balanced chemical equation

- vi. Students will identify reactants and products of a balanced chemical equation.
- vii. Students will determine if given chemical equations are balanced or not
- viii. Students will name a compound by its chemical formula based on the bonding.
- ix. Students will give a compound's name and determine the formula.
- x. Students will compare and contrast ionic bonding with covalent bonding.

**STANDARDS ON Unit 4 Test**

<b>Chemistry: Atomic and Nuclear Theory and the Periodic Table</b>	<b>Chemistry: Chemical Reactions and Properties of Matter</b>	<b>Physics: Energy, Force and Motion</b>	<b>Physics: Waves, Electricity, Magnetism, and Nuclear</b>
	<b>SPS3a</b>		
	<b>SPS3b</b>		

**3rd 9 Weeks Formal Assessments**

**5. Unit 5 Test (Solutions, Acids, & Bases – 9 DAYS)**

**a. Student Goals:**

- i. Students will explain the properties of solutions.
- ii. Students will develop models to explain the properties of solutions.
- iii. Students will use models to explain the properties of solutions.
- iv. Students will plan and carry out investigations to determine how temperature, surface area, and agitation affect the rate a solute dissolves in a solvent.
- v. Students will analyze and interpret data to determine the effect of temperature on solubility.
- vi. Students will use information to explain relationships between the structure and properties of acids and bases.

- vii. Students will detect patterns to classify common substances as acidic, basic, or neutral.

**STANDARDS ON Unit 5 Test**

<b>Chemistry: Atomic and Nuclear Theory and the Periodic Table</b>	<b>Chemistry: Chemical Reactions and Properties of Matter</b>	<b>Physics: Energy, Force and Motion</b>	<b>Physics: Waves, Electricity, Magnetism, and Nuclear</b>
	<b>SPS6a</b>		
	<b>SPS6b</b>		
	<b>SPS6c</b>		
	<b>SPS6d</b>		
	<b>SPS6e</b>		

**6. Unit 6 Test (Motion – 8 DAYS)**

**a. Student Goals:**

- i. Students will plan and carry out an investigation to analyze the motion of an object using mathematica and graphical models.

**STANDARDS ON Unit 6 Test**

<b>Chemistry: Atomic and Nuclear Theory and the Periodic Table</b>	<b>Chemistry: Chemical Reactions and Properties of Matter</b>	<b>Physics: Energy, Force and Motion</b>	<b>Physics: Waves, Electricity, Magnetism, and Nuclear</b>
		<b>SPS8a</b>	

**7. Unit 7 Test (Force) – 10 DAYS**

**a. Student Goals:**

- i. Students will construct an explanation based on experimental evidence to support the claims presented in Newton’s three laws of motion.
- ii. Students will analyze and interpret data to identify the relationship between mass and gravitational force for falling objects.

**STANDARDS ON Unit 7Test**

<b>Chemistry: Atomic and Nuclear Theory and the Periodic Table</b>	<b>Chemistry: Chemical Reactions and Properties of Matter</b>	<b>Physics: Energy, Force and Motion</b>	<b>Physics: Waves, Electricity, Magnetism, and Nuclear</b>
		<b>SPS8b</b>	
		<b>SPS8c</b>	

**8. Unit 8 Test (Work, Mechanical Advantage, & Simple Machines – 7 DAYS)**

**a. Student Goals:**

- i. Students will use mathematics and computational thinking to identify the relationship between work, mechanical advantage, and simple machines

**STANDARDS ON Unit 8 Test**

<b>Chemistry: Atomic and Nuclear Theory and the Periodic Table</b>	<b>Chemistry: Chemical Reactions and Properties of Matter</b>	<b>Physics: Energy, Force and Motion</b>	<b>Physics: Waves, Electricity, Magnetism, and Nuclear</b>
		<b>SPS8d</b>	

**9. Unit 9 Test (Energy Transformations & Heat – 11 DAYS)**

**a. Student Goals:**

- i. Students will construct explanations for energy transformations within a system.
- ii. Students will plan and carry out investigations to describe how molecular motion relates to thermal energy changes in terms of conduction, convection, and radiation.
- iii. Students will analyze and interpret specific heat data to justify the selection of a material for a practical application.
- iv. Students will analyze and interpret data to explain the flow of energy during phase changes using heating/cooling curves.

**STANDARDS ON Unit 9 Test**

<b>Chemistry: Atomic and Nuclear Theory and the Periodic Table</b>	<b>Chemistry: Chemical Reactions and Properties of Matter</b>	<b>Physics: Energy, Force and Motion</b>	<b>Physics: Waves, Electricity, Magnetism, and Nuclear</b>
		<b>SPS7a</b>	
		<b>SPS7b</b>	
		<b>SPS7c</b>	
		<b>SPS7d</b>	

**4th 9 Weeks Formal Assessments**

**10. Unit 10 Test (Waves – 16 DAYS)**

**a. Student Goals:**

- i. Students will analyze and interpret data to identify the relationships among wavelength, frequency, and energy in electromagnetic waves and amplitude and energy in mechanical waves.
- ii. Students will ask questions to compare and contrast the characteristics of electromagnetic and mechanical waves.
- iii. Students will develop models based on experimental evidence that illustrate the phenomena of reflection, refraction, interference, and diffraction.
- iv. Students will analyze and interpret data to explain how different media affect the speed of sound and light waves.
- v. Students will develop and use models to explain the changes in sound waves associated with the Doppler Effect.

**STANDARDS ON Unit 10 Test**

<b>Chemistry: Atomic and Nuclear Theory and the Periodic Table</b>	<b>Chemistry: Chemical Reactions and Properties of Matter</b>	<b>Physics: Energy, Force and Motion</b>	<b>Physics: Waves, Electricity, Magnetism, and Nuclear</b>
			<b>SPS9a</b>
			<b>SPS9b</b>
			<b>SPS9c</b>
			<b>SPS9d</b>
			<b>SPS9e</b>

**11. Unit 11 Test (Electricity – 14 DAYS)**

**a. Student Goals:**

- i. Students will use mathematical and computational thinking to support a claim regarding relationships among voltage, current and resistance.
- ii. Students will develop and use models to illustrate and explain the conventional flow (direct and alternating) of current and the flow of electrons in simple and parallel circuits.
- iii. Students will plan and carry out investigations to determine the relationship between magnetism and the movement of electrical charge.

**STANDARDS ON Unit 11 Test**

<b>Chemistry: Atomic and Nuclear Theory and the Periodic Table</b>	<b>Chemistry: Chemical Reactions and Properties of Matter</b>	<b>Physics: Energy, Force and Motion</b>	<b>Physics: Waves, Electricity, Magnetism, and Nuclear</b>
			<b>SPS10a</b>
			<b>SPS10b</b>