SAUSD Common Core Aligned Curriculum Map: High School Chemistry Year at a Glance

	Title	Time	Performance Task	Big Idea	Essential Questions	Core Texts
First Semester *	**Unit 1:** Structure and Properties of Matter & Nuclear Processes (HS-PS1-1, HS-PS1-8, HS-PS2-6) Chemical Reactions (HS-PS1-2)	10 weeks	• Construct a physical model to illustrate the substructures of an atom • Use the periodic table to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms. • Write an essay about why the molecular-level structure is important in the functioning of designed materials. • Construct a model to illustrate the changes in the composition of the nucleus and the energy released during the process of fission, fusion, and radioactive decay. • Write an argumentative essay about using or not using nuclear power plants.	The properties of elements determine how atoms and molecules interact. Radioactivity, the release of energy from stars, and generation of nuclear energy involve the processes of fission, fusion, and radioactive decay.	1. What are the substructures of an atom and how do they influence the formation and abundance of the elements? 2. How can the substructures of an atom be used to explain the properties of substances? 3. How can the Periodic Table be used to explain and predict the properties of elements? 4. How is the nucleus changed (with respect to the number of neutrons and protons) during fission, fusion, and radioactive decay? 5. How is energy released during the processes of fission, fusion, and radioactive decay? 6. Should we have nuclear power plants?	Prentice Hall Chemistry Journal articles Media/Technology: Videos

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	Unit 2: Chemical Reactions (HS-PS1-4)	2 Weeks	• Develop a model to illustrate that the release or absorption of energy from a chemical reaction depends upon the changes in total bond energy.	. Energy is neither created nor destroyed.	1. What is the relationship between the bond energy between atoms and the bond enthalpy of a molecule? 2. How can the bond energy between atoms be used to prove the energy is neither created nor destroyed in a chemical reaction? 3. How are the diagrams different for chemical reactions that release energy versus reactions that absorb energy?	Prentice Hall Chemistry Journal articles Media/Technology: Videos
	Unit 3: Structure and Properties of Matter (HS-PS1-3)	4 weeks	• Plan and conduct an investigation to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles.	Forces attract, hold together, or repel matter	1. How do intermolecular forces between particles explain the bulk properties of substances? 2. How is heat related to temperature and phase changes and the relevance of a heating curve? 3. What is the relationship between intramolecular forces (bonding) and intermolecular forces?	Prentice Hall Chemistry Journal articles Media/Technology: Videos

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Second Semester **	**Unit 4**: Energy (HS-PS3-4, HS-PS3-3)	4 Weeks	• 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. • Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative position of particles (objects). • 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).	Energy can be transferred but must be conserved.	1. How is energy transferred? 2. How is energy conserved? 3. Why are some energy sources renewable while others will deplete over time? 4. How are some energy sources more efficient than others?	Prentice Hall Chemistry Journal articles Media/Technology: Videos
	Unit 5: Chemical Reactions (HS-PS1-7)	4 Weeks	• Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.	Mass is neither created nor destroyed.	1. How are atoms and therefore mass conserved during a chemical reaction? 2. How can the knowledge of the conservation of atoms and the chemical properties of elements involved be used to describe and predict chemical reactions? 3. What is the significance of the mole in the conversion from the atomic scale to the macroscopic scale?	Prentice Hall Chemistry Journal articles Media/Technology: Videos

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	Title	Time	Performance Task	Big Idea	Essential Questions	Core Texts
	Unit 6: Chemical Reactions (HS-PS1-5, HS-PS1-6)	6 weeks	• Write an explanation about the effects of changing the temperature or concentration of the reacting particles o the rate at which a reaction occurs. • Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium	Substances can combine or change (react) to make new substances and predictions can be made of chemical reactions.	1. How are the rates of reaction and energy changes that occur during chemical reactions be understood in terms of collisions of molecules, and the rearrangement of atoms? 2. How does temperature or concentration of the reacting particles affect the rate at which a reaction occurs? 3. How can important biological and geophysical phenomena be explained on the basis of chemical reactions?	Prentice Hall Chemistry Journal articles Media/Technology: Videos

* Leaves 1 week for finals review and 1 week for getting to know your students.

** Leaves 2 weeks for finals review and 2 weeks for adjustments due to testing.