Chemistry MATTER AND ITS INTERACTIONS	
Louisiana Student Standards	**Louisiana Connectors (LC)**
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 and the composition of the nucleus of atoms.	**LC-HS-PS1-1a** Identify the periodic table as a model to use to predict the properties of elements.
	LC-HS-PS1-1b Identify that the periodic table was created based on the patterns of electrons in the outermost energy level of atoms.
	LC-HS-PS1-1c Identify that the number of electrons in the outermost energy level of atoms impacts the behavior of the element.
	LC-HS-PS1-1d Identify the periodic table as a model that predicts the number of electrons and other subatomic particles.
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.	**LC-HS-PS1-2a** Identify an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms.
	LC-HS-PS1-2b Identify an explanation for the outcome of a simple chemical reaction based on trends in the periodic table.
	LC-HS-PS1-2c Construct an explanation for the outcome of a simple chemical reaction based on the chemical properties of the elements involved.
HS-PS1-3 Plan and conduct an investigation to gather evidence to compare the structure of substances at the macroscale to infer the strength of electrical forces between particles.	**LC-HS-PS1-3a** Identify bulk properties of substances (i.e., melting point, boiling point, and surface tension).
	LC-HS-PS1-3b Identify that electrical forces within and between atoms can keep particles close together.
	LC-HS-PS1-3c Conduct an experiment to gather evidence of the strength of electrical forces between particles.

Chemistry MATTER AND ITS INTERACTIONS	
Louisiana Student Standards	**Louisiana Connectors (LC)**
HS-PS1-4 Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy.	**LC-HS-PS1-4a** Determine whether energy is released or absorbed in a chemical reaction system using various types of models (e.g., drawings, graphs, etc.).
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.	**LC-HS-PS1-5a** Identify the effects of changing the temperature of the reacting particles at the rate at which a simple reaction (i.e., two reactants) occurs using a model (e.g., a table of data) of the number and energy of collisions between particles.
	LC-HS-PS1-5b Identify the effects of changing the concentration of the reacting particles at the rate at which a simple reaction (i.e., two reactants) occurs using a model (e.g., a table of data) of the number and energy of collisions between particles.
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.	**LC-HS-PS1-6a** Identify a change in one variable (i.e., temperature, concentration, pressure) of a chemical equation that would produce increased amounts of products at equilibrium.
HS-PS1-7 Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.	**LC-HS-PS1-7a** Identify a chemical equation, and identify the reactants and products which support the claim that matter (i.e., atoms) is neither created or destroyed in a chemical reaction.
	LC-HS-PS1-7b Identify a mathematical representation (e.g., table, graph) or pictorial depictions that illustrates the claim that mass is conserved during a chemical reaction.
HS-PS1-8 Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay.	**LC-HS-PS1-8a** Identify models that illustrate nuclear processes (i.e., fusion, fission, and radioactive decays), involve the release or absorption of energy.
	LC-HS-PS1-8b Contrast changes during the processes of alpha, beta, or gamma radioactive decay using graphs or pictorial depictions of the composition of the nucleus of the atom and the energy released.

Chemistry MOTION AND STABILITY: FORCES AND INTERACTIONS	
Louisiana Student Standards	**Louisiana Connectors (LC)**
HS-PS2-6 Communicate scientific and technical information about why the atomic-level, subatomic-level, and/or molecular level structure is important in the functioning of designed materials.	**LC-HS-PS2-6a** Communicate that different materials have different molecular structures and properties which determine different functioning of the material (e.g., flexible, but durable).

Chemistry ENERGY	
Louisiana Student Standards	**Louisiana Connectors (LC)**
HS-PS3-1 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.	**LC-HS-PS3-1a** Identify a model showing the change in the energy of one component in a system compared to the change in energy of another component in the system.
	LC-HS-PS3-1b Identify a model showing the change in 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.
HS-PS3-3 Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.	**LC-HS-PS3-3a** Identify the forms of energy that will be converted by a device that converts one form of energy into another form of energy.
	LC-HS-PS3-3b Identify steps in a model of a device showing the transformations of energy that occur (e.g., solar cells, solar ovens, generators, turbines).
	LC-HS-PS3-3c Describe constraints to the design of the device which converts one form of energy into another form of energy (e.g., cost or efficiency of energy conversion).
HS-PS3-4 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).	**LC-HS-PS3-4a** Identify the temperatures of two liquids of different temperature before mixing and after combining to show uniform energy distribution.
	LC-HS-PS3-4b Investigate the transfer of thermal energy when two substances are combined within a closed system.
HS-PS3-6 Evaluate the validity and reliability of claims in published materials about the viability of nuclear power as a source of alternative energy relative to other forms of energy (e.g., fossil fuels, wind, solar, geothermal).	**LC-HS-PS3-6a** Identify the relationship between increasing energy demand and the technologies developed to meet these needs.
	LC-HS-PS3-6b Identify an alternative energy system with minimal social and environmental consequences.
	LC-HS-PS3-6c Evaluate a claim about nuclear energy as an alternative source of energy as opposed to other forms of energy.