TBA ISD LEADING LIFETIME LEARNING

PHYSICS PREREQUISITE HIGH SCHOOL CONTENT EXPECTATIONS (1) and CHEMISTRY PREREQUISITE HIGH SCHOOL CONTENT EXPECTATIONS (12) Cross-Referenced to the SCIENCE 5th -7th Grade Level Content Expectations (GLCEs)

Physics Prerequisite HSCE	Grade Level(s)	5-7 Content Statement	5-7 Science Content Expectation
P3.p8A Create a representation of magnetic field lines around a bar magnet and qualitatively describe how the relative strength and direction of the magnetic force changes at various places in the field. *(prerequisite)*	(4),6	***P.PM.E.3 Magnets - Magnets can repel or attract other magnets. Magnets can also attract certain non-magnetic objects at a distance.*** ***E.SE.M.6 Magnetic Field of Earth - Earth as a whole has a magnetic field that is detectable at the surface with a compass.***	***P.PM.04.33** Demonstrate magnetic field by observing the patterns formed with iron filings using a variety of magnets. **Minimal alignment in Middle School CEs** **E.SE.06.62** Explain how a compass works using the magnetic field of the Earth, and how a compass is used for navigation on land and sea.
Chemistry Prerequisite HSCE	**Grade Level(s)**	**Elementary Content Statement**	**5-7 Science Content Expectation**
P2.p1A Describe energy changes associated with changes of state in terms of the arrangement and order of the atoms (molecules) in each state. *(prerequisite)*	6	***P.CM.M.1 Changes in State - Matter changing from state to state can be explained by using models which show that matter is composed of tiny particles in motion. When changes of state occur, the atoms and/or molecules are not changed in structure. When the changes in state occur, mass is conserved because matter is not created or destroyed.***	**P.CM.06.11** Describe and illustrate changes in state, in terms of the arrangement and relative motion of the atoms or molecules.
P2.p1B Use the positions and arrangements of atoms and molecules in solid, liquid, and gas state to explain the need for an input of energy for melting and boiling and a release of energy in condensation and freezing. *(prerequisite)*	(4),6	***P.CM.E.1 Changes in State - Matter can be changed from one state (liquid, solid, gas) to another and then back again. This may be caused by heating and cooling.*** ***P.CM.M.1 Changes in State - Matter changing from state to state can be explained by using models which show that matter is composed of tiny particles in motion. When changes of state occur, the atoms and/or molecules are not changed in structure. When the changes in state occur, mass is conserved because matter is not created or destroyed.***	**P.CM.04.11** Explain how matter can change from one state (liquid, solid, gas) to another by heating and cooling. **P.CM.06.11** Describe and illustrate changes in state, in terms of the arrangement and relative motion of the atoms or molecules.

P3.p1A Explain that the amount of energy necessary to heat a substance will be the same as the amount of energy released when the substance is cooled to the original temperature. *(prerequisite)*	6	***P.EN.M.4 Energy Transfer - Energy is transferred from a source to a receiver by radiation, conduction, and convection. When energy is transferred from a source to a receiver, the quantity of energy before the transfer is equal to the quantity of energy after the transfer.***	**Not directly aligned** **P.EN.06.42** Illustrate how energy can be transferred while no energy is lost or gained in the transfer.
P3.p2A Trace (or diagram) energy transfers involving various types of energy including nuclear, chemical, electrical, sound, and light. *(prerequisite)*	6-7	***P.EN.M.4 Energy Transfer - Energy is transferred from a source to a receiver by radiation, conduction, and convection. When energy is transferred from a source to a receiver, the quantity of energy before the transfer is equal to the quantity of energy after the transfer.***	**Poor alignment: Content Expectations only refer to <u>light</u> energy transfer.** **P.EN.06.41** Explain how different forms of energy can be transferred from one place to another by radiation, conduction, or convection. **P.EN.07.33** Demonstrate how waves transfer energy when they interact with matter (for example: tuning fork in water, waves hitting a beach, earthquake knocking over buildings). **P.EN.07.43** Explain how light energy is transferred to chemical energy through the process of photosynthesis.
P4.p1A For a substance that can exist in all three phases, describe the relative motion of the particles in each of the phases. *(prerequisite)*	6	***P.CM.M.1 Changes in State - Matter changing from state to state can be explained by using models which show that matter is composed of tiny particles in motion. When changes of state occur, the atoms and/or molecules are not changed in structure. When the changes in state occur, mass is conserved because matter is not created or destroyed.***	**P.CM.06.11** Describe and illustrate changes in state, in terms of the arrangement and relative motion of the atoms or molecules.
P4.p1B For a substance that can exist in all three phases, make a drawing that shows the arrangement and relative spacing of the particles in each of the phases. *(prerequisite)*	6	***P.CM.M.1 Changes in State - Matter changing from state to state can be explained by using models which show that matter is composed of tiny particles in motion. When changes of state occur, the atoms and/or molecules are not changed in structure. When the changes in state occur, mass is conserved because matter is not created or destroyed.***	**P.CM.06.11** Describe and illustrate changes in state, in terms of the arrangement and relative motion of the atoms or molecules.
P4.p1C For a simple compound, present a drawing that shows the number of particles in the system does not change as a result of a phase change. *(prerequisite)*	6	***P.CM.M.1 Changes in State - Matter changing from state to state can be explained by using models which show that matter is composed of tiny particles in motion. When changes of state occur, the atoms and/or molecules are not changed***	**P.CM.06.11** Describe and illustrate changes in state, in terms of the arrangement and relative motion of the atoms or molecules.

		in structure. When the changes in state occur, mass is conserved because matter is not created or destroyed.	
P4.p2A Distinguish between an element, compound, or mixture based on drawings or formulae. *(prerequisite)*	7	***P.PM.M.2 Elements and Compounds- Elements are composed of a single kind of atom that are grouped into families with similar properties on the periodic table. Compounds are composed of two or more different elements. Each element and compound has a unique set of physical and chemical properties such as boiling point, density, color, conductivity, and reactivity.***	**Partial alignment: The only references to "mixture" are "soil" in 6th grade and "atmosphere" in 7th grade.** **P.PM.07.23** Illustrate the structure of molecules using models or drawings (water, carbon dioxide, salt). **P.PM.07.24** List examples of physical and chemical properties of elements and compounds (boiling point, density, color, conductivity, reactivity).
P4.p2B Identify a pure substance (element or compound) based on unique chemical and physical properties. *(prerequisite)*	7	***P.PM.M.1 Chemical Properties- Matter has chemical properties. The understanding of chemical properties helps to explain how new substances are formed.***	**P.PM.07.11** Classify substances by their chemical properties (flammability, pH, acid-base indicators, reactivity).
P4.p2C Separate mixtures based on the differences in physical properties of the individual components. *(prerequisite)*	NONE		**One 2nd grade CE "Classify objects as single substances or mixtures…"**
P4.p2D Recognize that the properties of a compound differ from those of its individual elements. *(prerequisite)*	7	***P.PM.M.2 Elements and Compounds- Elements are composed of a single kind of atom that are grouped into families with similar properties on the periodic table. Compounds are composed of two or more different elements. Each element and compound has a unique set of physical and chemical properties such as boiling point, density, color, conductivity, and reactivity.***	**P.PM.07.24** List examples of physical and chemical properties of elements and compounds (boiling point, density, color, conductivity, reactivity).
P5.p1A Draw a picture of the particles of an element or compound as a solid, liquid, and gas. *(prerequisite)*	6	***P.CM.M.1 Changes in State - Matter changing from state to state can be explained by using models which show that matter is composed of tiny particles in motion. When changes of state occur, the atoms and/or molecules are not changed in structure. When the changes in state occur, mass is conserved because matter is not created or destroyed.***	**P.CM.06.11** Describe and illustrate changes in state, in terms of the arrangement and relative motion of the atoms or molecules.