Springdale Public Schools
Curriculum At-A-Glance
Physical Science-Integrated

Semester 1: Units 1-3

Unit 1	**Forces & Interactions**
	PSI-PS2-1 Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration. Full Standard Evidence Statement
	PSI-PS2-3 Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision.* Full Standard Evidence Statement
	PSI-PS2-5 Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current. Full Standard Evidence Statement
Unit 2	**Energy**
	PSI-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. Full Standard Evidence Statement
	PSI-PS3-2 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). Full Standard Evidence Statement
	PSI-PS3-3 Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.* Full Standard Evidence Statement
	PSI-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). Full Standard Evidence Statement
Unit 3	**Waves**
	PSI-PS4-1 Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media. Full Standard Evidence Statement

	PSI-PS4-2 Evaluate questions about the advantages of using a digital transmission and storage of information. Full Standard Evidence Statement
Semester 2: Units 4 - 7	
Unit 4	**Matter & Its Interactions**
	PSI-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. Full Standard Evidence Statement
	PSI-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. Full Standard Evidence Statement
	PSI-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. Full Standard Evidence Statement
	PSI-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. Full Standard Evidence Statement
	PSI-PS1-7 Use mathematical representations to support the claim that atoms, and therefore mass is conserved during a chemical reaction. Full Standard Evidence Statement
	PSI-PS2-6 Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.* Full Standard Evidence Statement
Unit 5	**Matter & Energy Flow in Organisms**
	PSI-LS1-5 Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy. Full Standard Evidence Statement
	PSI-LS1-7 Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed, resulting in a net transfer of energy. Full Standard Evidence Statement
	PSI-LS2-4 Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem. Full Standard Evidence Statement

Unit 6	Our Earth
	PSI-ESS1-5 Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks.
	Full Standard Evidence Statement
	PSI-ESS2-1 Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.
	Full Standard Evidence Statement
	PSI-ESS2-7 Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth.
	Full Standard Evidence Statement
	PSI-LS4-5 Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.
	Full Standard Evidence Statement
Unit 7	**Our Impact**
	PSI-ESS3-1 Construct an explanation based on evidence for how the availability of natural resources, occurrences of natural hazards, and changes in climate have influenced human activity.
	Full Standard Evidence Statement
	PSI-ESS3-2 Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.*
	Full Standard Evidence Statement
	PSI-LS2-7 Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.*
	Full Standard Evidence Statement

All Engineering Statements used throughout the Units.

HS-ETS1-1 Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
Full Standard Evidence Statement
HS-ETS1-2 Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
Full Standard Evidence Statement
HS-ETS1-3 Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
Full Standard Evidence Statement

HS-ETS1-4 Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

Full Standard Evidence Statement