Science, by nature, is an inquiry-based discipline whereby students gain knowledge through observation and experimentation. Scientific investigations involve collection of relevant evidence, use of logical reasoning, application of imagination to devise hypotheses, and explanations to make sense of collected evidence. The process skills of scientific inquiry support development of reasoning and problem-solving ability and are the core of scientific methodologies.

The high school Physical Science curriculum encompasses the following three strands: Forces and Motion; Matter: Properties and Change; and Energy: Conservation and Transfer. Students begin with an introduction to scientific measurement and the process of scientific inquiry. In the Forces and Motion strand, gravitational forces, frictional forces, and Newton’s three laws of motion will all be used to help students understand how forces affect the motion of objects in nature. In the Matter: Properties and Change strand, students will understand types, properties, and structure of matter and what causes changes in matter to occur. In the Energy: Conservation and Transfer strand, students will understand that conservation of energy and energy transfer involve an understanding of energy types, wave nature, electricity, and magnetism. By the end of the year, students will have developed a depth of understanding of Physical Science that will prepare them for further study at the college level.
Matter: Properties and Change (Continued)

1. Infer valence electrons, oxidation number, and reactivity of an element based on its location in the Periodic Table.

2. Infer the type of chemical bond that occurs, whether covalent, ionic, or metallic, in a given substance.

3. Predict chemical formulas and names of simple compounds based on knowledge of bond formation and naming conventions.


5. Classify types of reactions such as synthesis, decomposition, single replacement, or double replacement.

6. Summarize the characteristics and interactions of acids and bases.

Understand the role of the nucleus in radiation and radioactivity.

Energy: Conservation and Transfer

1. Explain thermal energy and its transfer.

2. Explain the Law of Conservation of Energy in a mechanical system in terms of kinetic energy, potential energy, and heat.

3. Explain work in terms of the relationship among the applied force to an object, the resulting displacement of the object, and the energy transferred to an object.

4. Explain the relationship among work, power, and simple machines, both qualitatively and quantitatively.
1. Explain the relationships among wave frequency, wave period, wave velocity, and wavelength through calculation and investigation.

2. Compare waves (mechanical, electromagnetic, and surface) using their characteristics.

3. Classify waves as transverse or compressional (longitudinal).

4. Illustrate the wave interactions of reflection, refraction, diffraction, and interference.

5. Explain magnetism in terms of domains, interactions of poles, and magnetic fields.

6. Understand electricity and magnetism and their relationship.

1. Summarize static and current electricity.

2. Explain simple series and parallel DC circuits in terms of Ohm’s Law.

3. Explain how current is affected by changes in composition, length, temperature, and diameter of wire.

4. Understand the nature of waves.

5. Explain the practical applications of magnetism.