Kevin Shoup

Curriculum Design Project

**Learning Outcomes**

**Unit: Chemistry**

* Knowledge
  + Students will identify differences between heterogeneous and homogeneous substances
  + Students will locate the proper components of a atom
  + Students will label the various parts of the periodic table
* Comprehension
  + Students will differentiate between various types of atoms and their chemical properties
  + Students will compare types of atoms (metal vs nonmetal, etc.)
  + Students will compare and contract ionic and covalent bonds
* Application
  + Students will solve mole ratio calculations
  + Students will demonstrate the proper use of nomenclature
  + Students will complete various labs to demonstrate bond strength in covalent and ionic bonds
* Analysis
  + Students will analyze the various ways of separating a heterogeneous mixture into its various components
  + Students will be able to arrange the atoms in the periodic table based on size, charge, type, reactivity, and make up
* Synthesize
  + Students will be able to make predictions on unknown elements based on what is known of the periodic table
  + Students will be able to collaborate to produce an atomic model of various atoms
* Evaluation
  + Students will be able to test the strength of various bonds and chemical reactions.
  + Students will be able to explain the differences in states of matter and what causes the changes in state

**Unit: Physics**

* Knowledge
  + Students will be able to identify two types of waves
  + Students will show how energy can be transferred from one system to another
  + Students will state Newtons 3 laws of motion
* Comprehension
  + Students will compare types of waves
  + Students will summarize Newtons laws
  + Students will distinguish differences in Newtons 3 laws
  + Students will differentiate between distance, displacement, and direction
* Application
  + Students will calculate speed, velocity, acceleration
  + Students will show energy transformation through Rube Goldberg machines
  + Students will experiment with various types of motion and forces
  + Students will apply the laws of motion to gravity and projectiles
* Analysis
  + Students will analyze the various forces and changes in forces on objects in motion
  + Students will diagram the electromagnetic spectrum
* Synthesize
  + Students will design systems that will transfer energy to do work
  + Students will compose a system representative of the galaxy to proper scale.
  + Students will create circuit boards to show a transfer of energy
* Evaluation
  + Students will decide what forces are strongest on various moving objects and projectiles.
  + Students will test various cars and the amount of friction that is applied to each
  + Students will explain the law of conservation of energy