


Chemistry Curriculum Bundle #9

Title		Suggested Dates
Stoichiometry and Energy Changes		2/22 – 3/12 (13 days)

Big Idea/Enduring Understanding	Guiding Questions
Mathematical calculations can be used to determine quantitative relationships between reactants and products.	How are stoichiometry and cooking similar?

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the district curriculum.

Knowledge & Skills with Student Expectations	District Specificity/Examples	Suggested Resources (See note above)
<p>Allow one day for College Board MyRoads activities within this bundle.</p> <p style="text-align: center;">10th Grade—I. D. Me</p> <p style="text-align: center;">11th Grade—Major Search</p>		
<p>11 The student knows that balanced chemical equations are used to interpret and describe the interactions of matter.</p> <p>11C Explain and balance chemical and nuclear equations using number of atoms, masses, and charge.</p>	<p>Including</p> <ul style="list-style-type: none"> • Use stoichiometry of chemical equations to calculate molar conversions • Calculate <ul style="list-style-type: none"> ○ Mole ratio ○ Limiting reactant <p><i>define and use the concept of a mole</i></p> <p><i>use the mole concept to calculate the number of atoms, ions, or molecules in a sample of material</i></p> <p><i>calculate percent composition and empirical and molecular formulas</i></p> <p><i>use the law of conservation of mass to write and balance chemical equations</i></p> <p><i>perform stoichiometric calculations, including determination of mass relationships between reactants and products, calculation of limiting reagents, and percent yield</i></p>	<p>Stoichiometry Activities http://devacaf.caes.uga.edu/main/lessonPlan/SMoreLP.pdf</p> <p>Limiting Reactant Activity http://www.geocities.com/dschan77/SmoreStoichiometryActivity.doc</p> <p>Stoichiometry Lab See chemistry resource folder</p> <p>Mole Relationship Lab See chemistry resource folder</p>
<p>5 The student knows that energy transformations</p>	<p>Including</p>	<p>Interactive Phase Diagrams</p>

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<p>occur during physical or chemical changes in matter.</p> <p>5A Identify changes in matter, determine the nature of the change, and examine the forms of energy involved.</p>	<ul style="list-style-type: none"> • Analyze changes in state, Including <ul style="list-style-type: none"> • Freezing • Melting • Condensation • Evaporation • Sublimation • Deposition • Identify the changes in state with regard to the change in heat energy. • Describe and interpret phase change diagrams. • Describe the critical temperature and pressure for substances including water. • Understand the law of conservation of energy in relation to physical changes in matter. • (PAP) Define and identify normal boiling point and freezing point of water and other substances on phase diagrams 	<p>David N. Blauch http://www.chm.davidson.edu/ChemistryApplets/PhaseChanges/PhaseDiagram.html</p> <p>Interactive Phase Diagrams http://www.sciencegeek.net/Chemistry/taters/phasediagram.htm</p> <p>Heating and Cooling Curves http://library.thinkquest.org/C006669/data/Chem/colligative/phase.html</p>
<p>5 The student knows that energy transformations occur during physical or chemical changes in matter.</p> <p>5C Measure the effects of the gain or loss of heat energy on the properties of solids, liquids, and gases.</p>	<p>Including</p> <ul style="list-style-type: none"> • Explain the energy that are associated with phase changes and the specific heat of substances 	<p>Lab: Observing Energy Changes During Phase Changes http://hrsbstaff.ednet.ns.ca/dawsonrj/11%20Chem/Labs/Phase%20Change%20PDCB.htm</p> <p>Lab: Measuring the Specific Heat of Metals http://www.iit.edu/~smart/martcar/lesson5/id37.htm</p> <p>Online Lab: Calculate the Heat Capacity of Copper http://www.chm.davidson.edu/ChemistryApplets/calorimetry/SpecificHeatCapacityOfCopper.html</p>