


IPC Curriculum Bundle #11

Title	Suggested Dates
Water and Solutions	 4/19 – 5/7/2010 (12 days)

Big Idea/Enduring Understanding	Guiding Questions
Solutes dissolve in solvents to produce solutions with many uses.	How do the properties of water allow it to be the “universal solvent”? Why is solution chemistry essential to your being alive, happy, and intelligent?

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>9 The student knows how solution chemistry is a part of everyday life.</p> <p>9A Relate the structure of water to its function as the universal solvent.</p>	<p>Including</p> <ul style="list-style-type: none"> • Describe water as a polar molecule • <i>Relate the structure of water to its function as a solvent and investigate the properties of solutions and factors affecting gas and solid solubility, including nature of solute, temperature, pressure, pH, and concentration.</i> 	<p>Charge a balloon and bring it in close proximity to stream of water, watch it bend</p> <p>“Water Quality Lab” – <u>Investigations in Physics and Chemistry</u></p> <p>Hard Water Lab</p> <p>Adhesion Lab</p> <p>Surf Tension Lab (Surface Tension)</p> <p>http://physics.about.com/od/physicsexperiments/a/surface_tension_4.htm - Water Labs</p> <p>Why chemical nomenclature is important - www.dhmo.org</p> <p>“The Water Cycle” – <u>Investigations in Physics and Chemistry</u></p>
<p>9 The student knows how solution chemistry is a part of everyday life.</p> <p>9D Demonstrate how various factors influence solubility</p>	<p>Including</p> <ul style="list-style-type: none"> • Temperature • Pressure • Nature of the solute and solvent • Analyze solubility graph for different elements and compounds 	<p>“Solubility” – <u>Investigations in Physics and Chemistry</u></p> <p>Solubility Graphs are in textbook</p>

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	<ul style="list-style-type: none"> • <i>research and describe the environmental and economic impact of the end-products of chemical reactions such as those that may result in acid rain, degradation of water and air quality, and ozone depletion</i> <p>Teacher Note: Compare and contrast solubility of solids, gasses, and liquids.</p>	
<p>9 The student knows how solution chemistry is a part of everyday life.</p> <p>9E Demonstrate how factors influence the rate of dissolving.</p>	<p>Such as</p> <ul style="list-style-type: none"> • Particle size • Temperature • Pressure • Agitation 	<p>“Dissolving Rate Lab” – <u>Investigations in Chemistry and Physics</u></p> <p>Chem Rocket</p>
<p>7 The student knows relationships exist between properties of matter and its components.</p> <p>7E Classify samples of matter from everyday life as being elements, compounds, or mixtures.</p>	<p>Including</p> <ul style="list-style-type: none"> • Pure substances – Elements and compounds Mixtures <ul style="list-style-type: none"> ○ Heterogeneous mixture ○ Homogeneous mixture ○ Solutions (colloids and suspensions) 	<p>Colloids and Suspensions Lab (Centrifuge Liquids, Laser and Tyndall Effect)</p> <p>True Solutions Lab</p> <p>Class of Dispersions</p>
<p>8 The student knows that changes in matter affect everyday life.</p> <p>8B Analyze energy changes that accompany chemical reactions to classify them as endergonic or exergonic reactions.</p>	<p>Such as</p> <ul style="list-style-type: none"> • Heat packs • Cold packs • Glow sticks • Exothermic reactions • Endothermic reactions • Activation energy • Catalysts • <i>analyze energy changes that accompany chemical reactions such as those occurring in heat packs, cold packs, and glow sticks and classify them as exothermic or endothermic reactions</i> 	<p>“Chemical Changes Lab” – <u>Investigations in Physics and Chemistry</u></p> <p>“Endothermic and Exothermic Reactions” – video - http://streaming.discoveryeducation.com/search/assetDetail.cfm?guidAssetID=07BC02AD-6E64-42B1-B12C-F5EE8A46C4C3</p>