



IPC Curriculum Bundle #11

buTitle	 	Suggested Dates
Water and Solutions		4/18-5/6 (14 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)
Vocabulary: solution, solute, solvent, colloid, suspension, solubility, pH, acid, base, polarity, cohesion, adhesion, temperature, pressure, concentration, acid rain		
<p>IPC.6 Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:</p> <p>6E 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.</p>	<p>Structure and Properties of Water Including</p> <ul style="list-style-type: none"> • Describe water as a polar molecule • Cohesion • Adhesion • Surface Tension • Capillary Action <p>Including</p> <ul style="list-style-type: none"> • Nature of the solute and solvent • Analyze solubility graph for different elements and compounds <p>Teacher Note: Compare and contrast solubility of solids, gasses, and liquids.</p> <p>Such as</p> <ul style="list-style-type: none"> • Particle size • Temperature • Pressure • Agitation <p>Acids and Bases Including</p> <ul style="list-style-type: none"> • pH • Strong acid 	<p>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>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 -</p> <p>Why chemical nomenclature is important -</p>

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	<ul style="list-style-type: none"> • Weak acid • Strong base • Weak base • Reactivity • Know the pH scale, common acids and bases 	<p>www.dhmo.org</p> <p>“The Water Cycle” – <u>Investigations in Physics and Chemistry</u></p> <p>“Solubility” – Investigations in Physics and Chemistry Solutions, Solubility and Properties of Water ppt Solubility Graphs are in textbook</p> <p>“Dissolving Rate Lab” – <u>Investigations in Chemistry and Physics</u></p> <p>Chem Rocket</p> <p>Colloids and Suspensions Lab (Centrifuge Liquids, Laser and Tyndall Effect)</p> <p>True Solutions Lab</p> <p>Class of Dispersions</p> <p>“Chemical Changes Lab” – <u>Investigations in Physics and Chemistry</u></p>
<p>IPC.7 Science concepts. The student knows that changes in matter affect everyday life. The student is expected to:</p> <p>7F 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.</p>	<p>Including</p> <ul style="list-style-type: none"> • Propose ways to eliminate or reduce acid rain <p>Including</p> <ul style="list-style-type: none"> • Greenhouse Gasses • Toxic Waste 	<p>Arctic Tale - Movie</p>