

Unit 13: Chapters 15 & 16: Water and Aqueous Systems and Solutions

Content Area: **Science**
Course(s): **Chemistry Honors, Chemistry AH**
Time Period: **Generic Time Period**
Length: **3 weeks**
Status: **Published**

Standards

PS1-3

PS1-5

SCI.9-12.HS-PS1-5	Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.
SCI.9-12.HS-PS1-3	Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles.

Goals/Objectives

Why is water so important and unique?

How do things dissolve and how does dissolving change the properties of the individual components?

Content

Solvation (hydration)

Dissociation

Interparticle forces

Polar v. nonpolar

Concentration: Molarity, molality

Solubility

Colligative Properties

Skills

Describe solvation

Describe how interparticle forces (namely hydrogen bonding) are the reason behind water's unique properties

Describe the factors that affect solubility

Describe and apply colligative properties

Qualitatively and quantitatively describe the concentration of a solution

Interpret solubility graphs

Learning Activities/Instructional Strategies

- Chapter 15 Packet
- LAB: Factors Affecting Solution Formation
- LAB: Making a Solution
- LAB: Solvent Properties of Water
- LAB: Supersaturated Solution
- LAB: Surface Tension
- POGIL Molarity
- POGIL Solubility Curves

Assessment of Learning

- Chapter test
- Discussion
- Homework
- Lab report

Differentiation

- Alternative Assessments
- Choice of activities
- Choice of books
- Flexible grouping
- Guided reading
- Homework options (describe)
- Independent research and projects
- Leveled rubrics

- Modified materials
- Multiple texts
- Multi-sensory
- Personal agendas
- Pre-teach
- Re-teach
- Stations/Centers

21st Century

21st Century Themes

- Business, Financial, Economic Literacy
- Civic Literacy
- Global Perspectives
- Health Literacy

21st Century Skills

- Communication and Collaboration
- Creativity and Innovation
- Critical Thinking and Problem Solving
- Information Literacy
- Life and Career Skills
- Media Literacy

Interdisciplinary Connections

- Computers
- Engineering
- Math
- Science

Integration of Technology

- Calculators
- Computer Lab/Laptops

- Digital Scales & Meters
- Graphing Calculators
- Internet Resources
- iPads
- SMART Board

TECH.8.1.12.A	Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.
TECH.8.1.12.B	Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
TECH.8.1.12.C	Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
TECH.8.1.12.E	Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
TECH.8.1.12.F	Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
TECH.8.2.12.C	Design: The design process is a systematic approach to solving problems.
TECH.8.2.12.E	Computational Thinking: Programming: Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.