Unit 7: Equilibrium & Acids/Bases

Content Area: **Template**
Course(s):
Time Period:
Length:
Status: **Published**

State Mandated Topics Addressed in this Unit

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N/A	N/A

Unit 7: Equilibrium & Acids/Bases

Essential Questions

- How do chemists use acid/base reactions?
- What are some properties of acids?
- What are the different ways chemist define acids and bases?
- What does pH of a solution mean?

Objectives

- Classify a solution as acidic or basic using its [OH-] or [H+]
- Compare and contrast between strong/weak acids/bases.
- Compute the pH for given solutions and determine whether acid, base, or neutral
- Connect equilibrium concepts to real-world systems (e.g., biological buffers).
- Define acids and bases according to the Arrhenius, Bronsted-Lowry, and Lewis definitions
- Describe a the process and procedure of a titration
- Describe the relationship between [OH-] and [H+] in a solution
- Identify the products of an acid/base neutralization
- Predict the direction of shifts using Le Chatelier's Principle.

Standards

SCI.HS-PS1-6	Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium.

SCI.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.
9-12.HS-PS1-2	Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.
9-12.HS-PS1-7	Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.

Instructional Tasks/Activities

- Acid/Base Titration Lab
- Acids and Bases Lab
- Acids and Bases Virtual Lab (pH)
- Buffer Preparation Lab
- Common assessment quiz
- Constructed response
- Dynamic Equilibrium Color-Change Lab
- Equilibrium Constant Calculation
- Intro to Acids and Bases
- Kinetics/Acid Base Reactions Lab
- pH Indicator Exploration Activity
- Practice Identifying Acid Base Reactions
- Real-World Buffer Case Study
- Reflection: Equilibrium in Nature
- Titration Curve Analysis Stations

Assessment Procedure

- Classroom Total Participation Technique
- Classwork
- DBQ
- Essay
- Exit Ticket/Entrance Ticket/Do Now
- Flashcards and/or drill and practice
- Inquiry based activities with reflective discussion
- Journal / Student Reflection
- Kahoot
- Laboratory groups
- Lecture with note taking or guided notes
- Online models and simulators

- Other named in lesson
- Peer Review
- Performance
- Power Point Presentation
- Problem Correction
- Project
- Quiz
- Rubric
- Teacher Collected Data
- Test
- Whole and small group discussions
- Worksheet

Recommended Technology Activities

- Appropriate Content Specific Online Resource
- Chromebook
- Copy/Paste Content Specific Link Here
- Copy/Paste Content Specific Link Here
- Copy/Paste Content Specific Link Here
- Gimkit
- GoGuardian
- Google Classroom
- Google Docs
- Google Forms
- Google Slides
- Kahoot
- MagicSchool AI
- Other- Specified in Lesson
- Quiziz
- Screencastify

Accommodations & Modifications & Differentiation

Accommodations and Modifications should be used to meet individual needs. Their IEP and 504 plans should be used in addition to the following suggestions.

Gifted and Talented

- Compare & Contrast
- Conferencing
- Debates
- Jigsaw
- Peer Partner Learning
- Problem Solving
- Structured Controversy
- Think, Pair, Share
- Tutorial Groups

Instruction/Materials

- alter format of materials (type/highlight, etc.)
- color code materials
- eliminate answers
- extended time
- extended time
- large print
- modified quiz
- modified test
- Modify Assignments as Needed
- Modify/Repeat/Model directions
- necessary assignments only
- Other (specify in plans)
- other- named in lesson
- provide assistance and cues for transitions
- provide daily assignment list
- read class materials orally
- reduce work load
- shorten assignments
- study guide/outline
- utilize multi-sensory modes to reinforce instruction

Environment

- alter physical room environment
- assign peer tutors/work buddies/note takers
- assign preferential seating

- individualized instruction/small group
- modify student schedule (Describe)
- other- please specify in plans
- provide desktop list/formula

Honors Modifications

Resources

- Resource 1
- Resource 2
- Resource 3
- Resource 4
- Resource 5