Lesson Plans for AP Chemistry

Diane Paskowski

March 25th to April 4th

**Acids and Bases - Chapter 14**

Mass State Frameworks

* 8.1 Define the Arrhenius theory of acids and bases in terms of the presence of hydronium and hydroxide ions in water and the Bronsted-Lowry theory of acids and bases in terms of proton donors and acceptors.
* 8.2 Relate hydrogen ion concentrations to the pH scale and to acidic, basic, and neutral solutions. Compare and contrast the strengths of various common acids and bases (e.g., vinegar, baking soda, soap, citrus juice).
* 8.3 Explain how a buffer works.

College Board AP Chemistry Curriculum Guidelines:

C3 – The course provides instruction in the five content areas of which one is the reactions (Reaction types, Stoichiometry, Equilibrium, Kinetics, Thermodynamics).

C5 – Laboratory (Physical manipulations; Processes and procedures; Observations and data manipulation: Communication, group collaboration, and the laboratory report)

C6 – The course emphasizes the chemical calculations and the mathematical formulations of principles.

**Lessons**

Tuesday, March 25th

E day, Period 3

Lecture/discussion: Nature of acids. Acid dissociations and Ka and acid strength. Arrhenius and Bronsted-Lowry. Hydronium ion and conjugate acids and bases. pH scale and calculations.

Wednesday, March 26th

F day, Periods 2 and 3

Lecture/discussion: Amphoteric nature of water, Kw. Strength of conjugate acids and bases . The pH scale, Calculating pH, calculating [H+] and [OH-] using pH. pH of strong acids, pH of weak acids. Practice pH problems.

Thursday, March 27th

G day, Period 2

Lecture/discussion/practice problems: Bases and relative base strength, Kb. Calculating [H+] and [OH-]. Using the autoionization constant of water, Kw to determine pOH and pH.

Monday, April 1st

H day, Period 3

Lecture/discussion/practice problems: Calculating the dissociation of acids using Ka and calculating Ka from the %dissociation

Tuesday, April 2nd

A day, Periods 2 and 3

Lecture/discussion/activity/practice problems: Polyprotic Acids – using Dissociation constants to determine pH and % dissociation. Measuring pH of solutions and calculating concentrations. pH of salt solutions – conjugate acids and bases.

Wednesday, April 3rd

B Day, Periods 2 and 3

Lecture/discussion/practice problems/lab activity: pH of Salts – predicting and measuring.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Thursday, April 4th

C Day, Period 2

Lecture/discussion/practice problems: Structure and Acid-base properties. Lewis acid model and complex ions. Review problems.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Friday, April 5th

D Day, Period 3

Assessment on the properties of Acids and Bases

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**AP Chemistry – Chapter 14 Acids and Bases**

Homework Assignments

|  |  |  |  |
| --- | --- | --- | --- |
| Section | Pages | Exercises | Due Date |
| Nature of Acids and Bases | 673 – 674 | #27, 29, 33, 35 | Thursday, March 28th |
| Autoionization of Water and the pH Scale |  | #37, 41, 45 |  |
| Solutions of Acids | 674 – 675 | #47, 49, 51, 57, 59 | Monday, April 1st |
| Solutions of Acids | 675 – 676 | # 63 a-c, 65, 69 | Tuesday, April 2nd |
| Solutions of Bases | 676 | #71, 77, 81, 83 |  |
| Polyprotic Acids | 676 | # 93, 95 | Wednesday, April 3rd |
| Acid-Base Properties of Salts | 676 | #99, 101, 107, 111 | Thursday, April 4th |
| Structures and Lewis Acids | 677 | #113 and 119 |  |

Summaries and Key Terms are due on Friday, April 5th