Lesson Plans for AP Chemistry

Diane Paskowski

March 2nd to March 12th

**Chemical Kinetics - Chapter 12**

Mass State Frameworks

7.5 Identify the factors that affect the rate of a chemical reaction (temperature, mixing, concentration, particle size, surface area, catalyst).

Big Idea 4: Rates of Chemical Reactions are determined by details of the molecular collisions.

* 4.A: Reaction rates that depend on temperature and other environmental factors are determined by measuring changes in concentrations of reactants or products over time.
* 4.B: Elementary reactions are mediated by collisions between molecules. Only collisions having sufficient energy and proper relative orientation of reactants lead to products.
* 4.C: Many reactions proceed via a series of elementary reactions.
* 4.D: Reaction rates may be increased by the presence of a catalyst.

Essential Questions:

1. What factors affect the rate of reaction?
2. How are the rates of reaction determined experimentally?
3. What is the significance of rate orders for reactions?
4. What is the relationship of between rate order and reaction mechanism?

**Lessons**

Monday, March 2nd

D Day

Lecture/discussion: Introduce the concept of rate of reaction – conceptually, graphically, and mathematically. Differentiate between differential rate law and integrated rate law.

Tuesday, March 3rd

E day

Lecture/discussion: Practice problems – how to determine the Rate Law, graphically and mathematically. The significance of Rate Order and how to determine rate order.

Wednesday, March 4th

F day

Lecture/discussion: Half-lives of reactions and activity.

Thursday, March 5th

G day

Lecture/discussion: Reaction Mechanisms, intermediates, factors that affect Rate.

Friday, March 6th

H day

Lab Exercise – Rates of Reactions

Monday, March 9th

A day

Lecture/discussion: Reaction Mechanisms, intermediates, factors that affect Rate. Thermodynamics of Reactions – Activation energy.

Tuesday, March 10h

B day

Review Kinetics Day

Wednesday, March 11th

C day

Review of homework and interpretation of graphical data. Practice AP problems

Thursday, March 12th

D day

Assessment

Homework: Chapter 13: Chemical Kinetics

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| Section | Pages | Exercises | Due Date |
| Rate of a Reaction | p. 611 | #6, 8 | Wednesday, March 4th |
| The Rate Law | 611-612 | #10, 14, 16, 18 | Thursday, March 5th |
| Relations Between Reactant Concentration and Time | 612-613 | #24, 26, 28, 30 | Monday, March 9th |
| Graphical Interpretations |  | Worksheet | Tuesday, March 10th |
| Activation Energy | 613-614 | #31, 33, 37 | Tuesday, March 10th |
| Reaction Mechanisms and Catalysis | 614-615 | #48, 49, 51, 58, 59. 60, 62 to 64. | Wednesday, March 11th |

**Chapter 13 Chemical Kinetics**

**Summaries and Key Terms are due on Monday, March 9th**