Anoka-Hennepin Secondary Curriculum Unit Plan

Department:	Science	Course:	Chemistry I	Unit 9 Title:	Kinetics and Equilibrium	Grade Level(s):	10th
Assessed Trimester:	Trimester B	Pacing:	5 - 10 Days	Date Created:	6/7/2012	Last Revision Date:	6/26/2014

Course Understandings: *Students will understand that:*

- Problems can be solved and knowledge gained in a systematic way: solutions to one problem can create new questions and problems.
- Chemistry is recognized as significant in its application to other disciplines and the world.
- Ideas are expressed symbolically, numerically, and graphically.
- Behavior and properties of materials are organized, classified, and predicted utilizing periodic trends.
- Mathematical relationships are interpreted and manipulated to model the real world.
- The basic building blocks combine and recombine in a variety of ways to make all matter from the simple to the complex.
- The laws of chemistry predict outcomes that impact and apply to daily life.

DESIRED RESULTS (Stage 1) - WHAT WE WANT STUDENT TO KNOW AND BE ABLE TO DO?

Established Goals

- **Standard:**
  9C.2.1.3.6: Describe the factors that affect the rate of a chemical reaction, including temperature, pressure, mixing, concentration, particle size, surface area and catalyst
  9C.2.1.3.7: Recognize that some chemical reactions are reversible and that not all chemical reactions go to completion.
  9.2.1.2.4: Relate exothermic and endothermic chemical reactions to temperature and energy changes.

- **Standard:** Matter
  Chemical reactions describe a chemical change in which one or more reactants are transformed into one or more products.
  9C.2.1.3.6: Describe the factors that affect the rate of a chemical reaction, including temperature, pressure, mixing, concentration, particle size, surface area and catalyst
  9C.2.1.3.7: Recognize that some chemical reactions are reversible and that not all chemical reactions go to completion.

Transfer

Students will be able to independently use their learning to: (product, high order reasoning)

- Control and prepare for chemical reactions in life. (Rusting, fire control, food preparation/preservation, etc)

Meaning

Unit Understanding(s):	Essential Question(s):
Students will understand that: ● The rates of chemical reactions change based on the collisions between particles.	**Students will keep considering:** ● What factors influence the rate of a chemical reaction?

Acquisition

Knowledge - Students will:	Reasoning - Students will:
● Know that chemical reactions take place because of collisions between atoms. 9C.2.1.3.7 (M) ● Know that some chemical reactions are reversible. (L) 9C.2.1.3.7 ● Know that not all chemical reactions go to completion. (L) 9C.2.1.3.7 ● Recognize that a catalyst can increase the rate of a chemical reaction and is not used up in the reaction. (L) 9C.2.1.3.6	● Use collision theory to explain the effect of temperature, pressure, mixing, concentration particle size and surface area affect the rate of chemical reactions. (M) 9C.2.1.3.6 ● Relate endothermic and exothermic reactions to energy level diagrams. (L) **Skills - Students will:** ● Interpret an energy level diagram as either exothermic or endothermic. (L) 9.2.1.2.4

• Identify reactions as either endothermic or exothermic based on energy being released or absorbed. (L) 9.2.1.2.4	

Common Misunderstandings	**Essential new vocabulary**
• Some students don't understand the relationship between large and small particles of a substance and the amount of surface area. • Students believe that heat will speed up all chemical reactions.	• Catalyst • Endothermic • Exothermic • Activation energy • Equilibrium • Concentration • Particle Size • Surface Area • Agitation