State Standards (*** = Chem 1H only)

Topic 1: Factors that Affect Rates
SC.912.P.12.12   Explain how various factors, such as concentration, temperature, and presence of a catalyst affect the rate of a chemical reaction.

Topic 2:   Concepts of Equilibrium
SC.912.P.12.13   Explain the concept of dynamic equilibrium in terms of reversible processes occurring at the same rates.

4.0	Extensions/Applications	Students will be able to: ☐ Design an experiment to test how various factors (concentration, temperature, and catalysts) affect the rate of a chemical reaction. ☐ Explain how physics and chemistry concepts compliment one another in this chapter.
3.0	Learning Goal (Derived from State Standard)	Students will be able to: ☐ Define the following terms: Understand that motion can be measured and described qualitatively and quantitatively. ☐ Explain how net forces create a change in motion. ☐ Understand when objects travel at speeds comparable to the speed of light, Einstein's special theory of relativity applies. ☐ Define momentum as (mass)(velocity). Understand that momentum is conserved under well-defined conditions, and that a change in momentum occurs when a net force is applied to an object over a time interval. ☐ Be able to recognize the equation for The Law of Universal Gravitation, and explain that gravitational forces act on all objects irrespective of their size and position. ☐ Understand that chemical reaction rates change with conditions under which they occur. Chemical equilibrium is a dynamic state in which forward and reverse processes occur at the same rates.
2.0	Required Skills or Background Knowledge to accomplish Learning Goal	Students will be able to: ☐ Compare and contrast catalyst and inhibitor. ☐ Explain that gases consist of great numbers of molecules moving in all directions, and the behavior of gases can be modeled by the kinetic molecular theory. ☐ Give a basic definition of endothermic and exothermic reactions. ☐ Write and balance chemical equations.

1.0	With help from the teacher, student has partial success with the goal	With help from a teacher, students will be able to: ☐ Achieve partial success with 2.0 and/or 3.0.
0.0	Even with help, the student has no success with the goal	☐ Even with help, student is unable to understand or complete any of the skills in scales 1.0 through 4.0.