AP Chemistry

Description of Average Weekly Outside Requirements

Main Topics
(What main ideas/concepts are covered):

- Atomic Structure
- Chemical Bonds and Bonding
- Intermolecular Forces
- Chemical Reactions
- Kinetics
- Thermodynamics
- Equilibrium
- Acids and Bases
- Applications of thermodynamics

Rationale
(Why a student should take this course):

The AP Chemistry course is designed to be the equivalent of the general chemistry course usually taken during the first college year. For some students, this course enables them to undertake, in their first year, second year work in the chemistry sequence at their institution or to register for courses in other fields where general chemistry is a prerequisite.

Reading
(Text, document, etc.):

- Student will read 1-2 chapters in their textbook per unit.
- Units are covered over a two-week period.
- Students will also read and respond to free response questions.

Written
(Terms, questions, outlines, free response, etc.):

- Students will write lab reports, respond to book work and worksheet questions, and answer free response questions.

Grade Composition
(How grades are determined):

- Tests/Quizzes
- Lab Reports
- Homework
- Notebook
- Classwork

Required Skills
(Skills necessary to be successful in this course):

- Strong math skills- Geometry, Algebra 2
- Strong chemistry skills
- Strong, independent work ethic

Skill Development
(Skills developed in this course and how):

AP Chemistry meets the objectives of a good college general chemistry course. Students in such a course should attain an in depth understanding of fundamental chemistry concepts and a reasonable competence in dealing with chemistry related problems. Students should know basic laboratory techniques and be able to adapt and modify procedures when needed. The course should contribute to the development of students' ability to think clearly and express their ideas, orally and in writing, with clarity and logic.

Sample Textbook Excerpt:

The amount by which the entropy of the surroundings as increased can be determined using the following principle: the entropy of the surroundings increases by an amount equal to the heat energy they gain divided by the temperature at which it happens, therefore:

$$\Delta S_{surr} = \frac{-\Delta H}{T}$$

This relationship allows us to make a prediction about the entropy of the surroundings in a chemical process, whatever they are (even the whole universe), using the measurements we can make on the chemical system. The total entropy change can then be used to predict whether a reaction is feasible or not at a given temperature. The total entropy is equal to:

$$\Delta S_{total} = \Delta S_{sys} + \Delta S_{surr}$$