

AP Chemistry
2011-2012

Overview

AP Chemistry is a one year chemistry program designed to prepare high school students for college chemistry. The course accomplishes this by in effect being a freshman level college chemistry course. It is taught to the same depth of understanding that a freshman science major would experience at a university. If a student in this course performs adequately well on the AP Chemistry Exam in May, that student will be eligible to receive college credit for a freshman level chemistry course. Whether or not such credits are assigned is determined solely by the university in question.

The class will be taught at a pace determined by the teacher. Achieving a level of understanding of each topic covered will be the responsibility of each individual student. *The pace of the class will not be slowed for any reason other than teacher discretion.* If a student is having difficulty with a particular topic, it is that student's responsibility to use their own free time to relearn the material either on their own or with the help of the teacher. I will be very generous with my time in order to help my AP Chemistry students.

The textbook for this course is Chemistry by Zumdahl.

Teacher Responsibilities

This class will be very demanding on both the students and the teacher. As your teacher, I will make the following commitments to you:

1. *You will be my top priority.* My AP Chemistry students will be the most important students I have. If you need help outside of class, I will do everything in my power to help you. If you come to my room for help, you will be first in line, even if others have been waiting. My home phone number is XXX-XXXX; please feel free to call me any day, seven days a week, before 10 PM with questions. This option is not available to my other students.
2. *I will grade your papers promptly.* Any assignments, tests, experiments, etc. will be graded quickly. I will grade your papers before I grade papers from another class.
3. *I will be prepared for class every day.* This class will cover a lot of material; therefore, there will be little time to work on homework in class. Lectures, example problems, discussions, and experiments will take up the bulk of the class time.
4. *I will always be on your side.* I will not view you as opponents, but teammates. As far as I am concerned this is not a competition between you and me, but rather a competition between us and the AP Chemistry Exam.

Please take advantage of my availability. Do not let yourself fall behind. If you find a topic that you do not understand, seek extra help immediately.

Schedule

The following is a list of units that we will be covering and an approximate time frame for each unit. There will be a heavy emphasis on the mathematical and theoretical components of chemistry. A solid foundation in mathematics and conceptual thinking are necessary for success.

In addition to the following topics, there will be extensive time dedicated to understanding the different types of chemical reactions, balancing, and the physical states of the reactants & products. This will be done throughout the school year; understanding reactions is necessary not only to do well on the AP Exam, but also in order to understand chemistry as a whole.

<u>Unit Name</u>	<u>Number of Days</u>	<u>IL State Learning Goals</u>
Review of Fundamentals	3	
Bonding	10	12.C.5b, 12.D.5b
Stoichiometry	18	12.C.5a
Kinetics	15	12.C.5a, 12.D.5b
Equilibrium/Acid & Base Equilibrium	18	12.C.5a
Thermodynamics	6	12.C.5a, 12.D.5b
Electrochemistry	11	12.C.5a
Gases	15	12.C.5a, 12.D.5a, b
Heat	8	12.C.5a,b
Gas Equilibrium	10	12.C.5a,b
Atomic Structure/Periodic Table	8	12.D.5b, 12.F.5a
Liquids & Solids	7	12.C.5a,b
Colligative Properties	6	12.C.5a,b
Nuclear Chemistry	2	12.D.5b, 12.F.5a
Organic Chemistry	2	12.C.5a,b
Solid Equilibrium	6	12.C.5a,b

In addition to the State Learning Goals referenced above there are several others that are met either in the experimental portion of the class or during discussion throughout several of the units in the schedule. These are as follows:

11.A.5a-e

13.A.5a

Grades

Grades will be calculated on a total points system. Students will be expected to keep track of their own grade. No class time will be used to discuss student grades.

Exams will be given periodically throughout the year, but not after every unit. Ideally, I would like to give one exam per quarter. Each exam will be written in the style of the AP Chemistry Exam free-response and multiple-choice sections. Each test will also be comprehensive for any material covered up to that point in the school year.

Quizzes will be given weekly, probably on Tuesday. Each quiz will be one free-response question written in the style of the AP Chemistry Exam, and will count as 10 points.

Experiments will be done approximately every other week. They will count different numbers of points depending on the activity. Experiments are a large part of the AP Chemistry program. You will be required to keep a laboratory notebook that will be used to record all data & calculations. You will also be required to produce an organized lab report for several laboratory experiences. The details of these reports are included on the last page.

Homework will be assigned almost every day. Some will be reading, most will be written. *Do not ignore your homework.* It will cost you dearly. Each homework assignment will be worth 10 points and will be checked for completion before you enter the classroom.

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Below is a list of the experiments we will be doing during the course of the year. Each of these experiments will take between two and four class periods to complete.

- Experiment 1: Determination of the Empirical Formula of Silver Oxide
- Experiment 2: Analysis of Aluminum Potassium Sulfate
- Experiment 3: Determination of the Molar Mass of Gases & Volatile Liquids
- Experiment 4: Molar Mass by Freezing Point Depression
- Experiment 5: Determining the Molar Volume of A Gas
- Experiment 6: Acid-Base Titrations (Part 1: Standardization of a Solution)
- Experiment 7: Acid-Base Titrations (Part 2: Determining Concentration by Titration)
- Experiment 8: Oxidation-Reduction Titrations
- Experiment 9: Determining the Stoichiometry of Chemical Reactions
- Experiment 10: Determination of K_a of Weak Acids
- Experiment 11: Selecting Indicators for Acid-Base Titrations
- Experiment 12: Kinetics of a Reaction
- Experiment 13: Thermodynamics-Enthalpy of Reaction & Hess' Law
- Experiment 14: Separation & Qualitative Determination of Cations & Anions
- Experiment 15: Synthesis & Analysis of a Coordination Compound
- Experiment 16: Gravimetric Analysis of a Metal Carbonate
- Experiment 17: Determination of K_{eq} for $FeSCN^{+2}$
- Experiment 18: Liquid Chromatography
- Experiment 19: pH Properties of Buffer Solutions
- Experiment 20: An Activity Series
- Experiment 21: Electrochemical Cells
- Experiment 22: Synthesis, Isolation, and Purification of an Ester

AP Chemistry Lab Report Description

It has been decided that all lab reports will be of a standard form. Included below are all the pertinent details.

General Details

All lab reports must be typed, double spaced, and printed only on one side per page. All reports must be printed on paper (no electronic copies will be accepted). I will expect 12 point Times New Roman font. Every student will write his or her own lab report; even lab reports submitted by lab partners must be different. You may not plagiarize.

The first page should contain the following header:

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Experiment #?: Name of Experiment

Your Name

Date

Every section of the lab report should be labeled (“Purpose”, “Procedure”, etc.) with the heading underlined.

Your entire lab report should be written in third person, past tense. At no point should you make reference to a person.

Purpose

This section of the lab will briefly describe the purpose of the experiment. It should only be a few sentences in length.

Procedure

This will not be a direct copy of the procedure you will be given. Rather, it will be a description of everything you did in your procedure, including any mistakes you made.

Data

This section will contain any and all measured data from the experiment, usually in tabular form of your own design. Be certain that all reported data points be to the correct number of significant figures as allowed by the measuring instrument.

Calculations

This section will include one example of any calculations that were done as part of the write-up. This will include a complete setup with units and correct significant figures. If you need to do the same calculation to more than one number, show only one calculation as an example, and show the results from the others.

Discussion

In this section, you will summarize your results and address how well your lab work satisfied the purpose statement of your experiment. You should also include any errors that could have affected the results of your experiment.

Questions

If any questions are included on the original handout, they need to be answered here.