

AP[®] CHEMISTRY

LINCOLN HIGH SCHOOL COURSE SYLLABUS

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Overview:

AP Chemistry is first year college level chemistry taught in high school. This course will meet on a modified block schedule. 3 days a week we will have a 50-minute class period. Twice a week this course will meet for 80 minutes. The following will be the schedule used for AP Chemistry Students:

Mon/Wed Block

Period 2 Chemistry Students

1st Period: (M-F) 8:20-9:10
2nd Period: (M,W) 9:15-10:35
 (T, Th, F) 9:15-10:05
Ad-Room: (T, Th) 10:10-10:35
3rd Period: Back on Schedule

Period 5 Chemistry Students

1st Period: (M-F) 8:20-9:10
2nd Period: (M-F) 9:15-10:05
Ad Room: (M-F) 10:10-10:35
3rd Period : (M-F) 10:40-11:30
4th/5th Period: (M,W,F) 12:30-1:25
 (T,Th) 12:00 – 1:25
6th Period: Back on Schedule

Tues/Thur Block

Period 3 Chemistry Students

1st Period: (M-F) 8:20-9:10
2nd Period: (M-F) 9:15-10:05
Ad-Room: (M, W) 10:10-10:35
3rd Period: (M, W) 10:40-11:30
 (T, Th) 10:10-11:30
4th Period: Back on Schedule
*Friday follow normal schedule

Lab activities are an integral part of this course. We will average a minimum of 2 hours per week spent in the Lab. Labs will be done in groups of 2-3 students and many will be inquiry based lab activities.

Textbook:

Brown, LeMay, and Bursten: Chemistry the Central Science, 9th Edition, Prentice Hall, 2003.

Student Solutions Manual:

Wilson, R: Solutions To Exercises Chemistry the Central Science, 9th Edition, Prentice Hall, 2003.

Lab Manuals:

Randall, J: Advanced Chemistry with Vernier, First Edition, Vernier Software & Technology, 2004.

Waterman, Thompson: Small-Scale Chemistry Lab Manual, Addison-Wesley Publishing Company, 1993.

Nelson, Kemp: Laboratory Experiments Chemistry The Central Science, Prentice Hall, 2003.

Course Design:

The Advanced Placement Program in Chemistry consists of first year college level chemistry as prescribed by the College Board. The course is centered around the following topics: stoichiometry, structure of matter, atomic and molecular theory, periodic table, chemical bonding, kinetic theory of gases, chemical equilibria, chemical kinetics, thermodynamics, acids and bases, oxidation-reduction, electrochemistry, nuclear, and organic nomenclature. Other topics are related to those listed above. Technology will be incorporated into the course through the use of the mobile computer lab, CBL's, TI Interactive, Smart Board[®] applications, and as well as other various applications of technology. As we develop, illustrate, and extend this conceptual core, we will see the interplay of nature and human creativity in a variety of chemical processes and materials.

Schedule:

The following schedule will provide an overview of the topics covered in this course. Every two weeks a detailed assignment sheet will be given to the student. This will include assignments and the dates of each lab, quiz, and test.

FIRST SEMSTER

Chapter	Topics	Time Spent
1	Matter, Measurement, Sig Figs, Dimensional Analysis	5 days
2	Atomic Theory, Periodic Table, Nomenclature, Organic	6 days
3	Stoichiometry, The Mole, Empirical/Molecular Formulas	6 days
4	Concentrations, Aqueous reactions, Solution Stoichiometry	9 days
5	Thermochemistry, Hess's law, Enthalpies of formation	8 days
6	Electronic Structure, Quantum Mechanics, Atomic Orbitals, Electron Configurations, Periodicity	7 days
END OF FIRST QUARTER		
7	History of Periodic Table, Periodicity	5 days
8	Chemical Bonding, Lewis Structures, Ionic Bonding,	8 days

	Enthalpy of Reaction	
9	Molecular Geometry, VSEPR Theory, Hybrid Orbitals, Polarity	8 days
10	Gases, Gas Laws, Kinetic Molecular Theory	8 days
11	Intermolecular Forces, Liquids, Solids, Phase Diagram	6 days
	SEMSTER TEST/REVIEW	5 days

SEMESTER BREAK

12	Modern Materials, Chemical Applications	2 weeks
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2nd SEMESTER

13	Solutions, Concentrations, Solubility, Colligative Properties	6 days
14	Chemical Kinetics, Reaction Rate, Reaction Mechanisms, Catalysts,	8 days
15	Equilibrium, Calculating Equilibrium Constants, LeChatlier's Principle	7 days
16	Acids, Bases, Ka, Kb, pH Calculations	7 days
17	Common Ion Effect, Buffers, Titrations, Qualitative Analysis	8 days
19	Thermodynamics, Spontaneity, Entropy, Gibbs Free Energy	8 days
	END OF THIRD QUARTER	
20	Electrochemistry, Voltaic Cells, Oxidation-Reduction, Batteries, Electrolysis	9 days
21	Nuclear Reactions, Half Life	3 days
	AP TEST REVIEW	20 days
Post Test	Lab Activities	10 days
	SEMSTER TEST/REVIEW	3 days

Lab Activities:

Overview

The lab should be an enjoyable experience as well as an occasion for learning. All Labs are hands on activities done in the Laboratory. You will spend an average of 2 hours per week in the Lab. The intent of the modified block schedule is to provide ample time engaged in these lab activities. These activities are intended to illustrate, clarify, and extend class discussions. It also provides an opportunity for discovery by careful observation, use of experimental techniques, and careful interpretation. When applicable labs will be inquiry based. It is expected that you come to the Laboratory prepared. Therefore to receive full credit, before entering the lab area, a page in your lab notebook should contain your heading, and the data table should be formatted.

Notebook

You will be supplied with a duplicate lab notebook. You will be required to complete all labs listed below and keep them in this notebook. The yellow duplicate sheet will be turned in and you will keep the original copy in the lab notebook. Any lab turned in late will be deducted 10% per day. At the end of this course, you will want to keep this notebook. In order to receive college credit, many professors will want to see this book.

Safety

Lab Safety is extremely important in AP Chemistry. Safety glasses must be worn in the lab at All times! The use of contacts can be dangerous and should not be worn in the lab. Regard every chemical as poisonous and flammable unless you definitely know otherwise, and exercise corresponding caution. Become acquainted with the safety equipment in the laboratory. Report any accident immediately to your instructor. Do not leave coats, books, and supplies in the lab area but rather leave them on the tables. DO NOT BRING ANY FOOD OR DRINK INTO THE LAB. At the end of each lab period, clean your equipment and the lab desktop. Dispose of used paper towels into the trash. Dispose of any used or unused chemicals as directed by your instructor.

Lab Schedule

CHAPTER	EXPERIMENT
1	Chromatography Lab – Separation of Mixtures
2	Lab: Formula Forensics - Determination of water in a hydrate
3	Chemical Reactions of Copper and Percent Yield – Stoichiometry
3	Determining the Mole Ratios in a Chemical Reaction
4	Reactions of Aqueous Ionic Compounds – Small Scale
4	Titration Experiment – Weak Base with a Strong acid
5	Calorimetry Lab Experiment – CBL's
6	Emission Spectra Lab
7	None
8	None
9	Molecular Models – Shapes and Polarities
10	Molecular Mass of a Volatile Liquid –CBL's
10	Molar Volume of a Gas – CBL's
11	Triple Point of Dry Ice
12	None
13	Determination of Molar Mass Using Freezing Point Depression –CBL's
14	Rate and Order of a Chemical Reaction – CBL's
15	The Determination of the Equilibrium Constant – CBL's
15	LeChatlier's Principle Lab
16	Acidic Strength of Salts Lab

17	Acid/Base Titration – CBL's
17	Qualitative Analysis
19	Molar Heat of a Reaction
20	Electrochemistry Voltaic Cells –CBL's
Post Test	Various Laboratory Experiments – These will vary year-to-year depending on time and class interests. – See Weekly Schedule

Time Expectations:

You are expected to spend an average of five hours a week in individual/group study time outside of class. The first few chapters will consist of some review. Don't be fooled into thinking that you will not need to prepare. Many have found that when they let up on studying, they fall behind, and it is difficult to catch up.

Attendance and Class Discussions:

One of the skill areas that students need to develop for college success is the skill of note taking. The student should bring a three ring binder so other papers such as assignments and handouts may be added to the notebook as well as lecture notes. Students absent from class are responsible for doing their assignments from the biweekly assignment sheet. Examinations, quizzes, and lab reports are expected to be taken when scheduled unless you have an excused absence. You will know of a scheduled text or quiz so expect to take it if you were gone the previous day(s). If possible, the student should attempt to inform the instructor of an excused absence ahead of time. At the end of each semester the student will take a semester test. As per district policy, the test will count 15% towards your final grade.

Problem Solving:

Problems are extremely important if you are to master chemistry. Doing these problems in a step-by-step manner, will help to make you successful in chemistry. On all tests, quizzes, and labs; formulas, units, and showing work are expected. You are required to work all assigned exercises each chapter. You are encouraged to keep up with this daily. Each chapter the assigned exercises will be turned in the day before the test. For review, it is highly encouraged to work the even exercises. This will help to prepare you for the chapter and semester tests. Each student is supplied with a solutions manual, which provides step-by-step directions on how to complete all problems. You should use this manual to help answer any questions you may have as you work problems. If you are unable to understand a problem you are encouraged to come in before or after school for individual help.

Grading:

This course uses a weighted grade system as follows:

Tests: 65% of the quarter grade

Labs: 15% of the quarter grade

Quizzes: 10% of the quarter grade
Homework: 10% of the quarter grade

85% of your semester grade will be determined by the average of the two quarters. A semester test will count for the remaining 15%.

All make up work is to be completed within a week of an excused absence.

Test Retakes:

In order to ensure understanding, retakes or test corrections are provided with each chapter test. Students are encouraged to complete the additional work to earn a portion of their missed test points back.

AP Test:

At the end of the second semester, each student is expected to take the AP Exam. A score of a 3,4 or 5 along with a completed lab notebook may result in college credit. We will review for approximately four weeks before the AP test in May. At the beginning and end of this review period, a practice exam will be given on a Saturday. You are highly encouraged to attend. You will also be provided with access to the APEX learning Web Site. This is an individualized study plan, which will help you to work on your weaknesses in this course. During these four weeks we will spend a significant amount of our time reviewing past released AP Exams. What we do in class should only be a part of your preparation for the AP Exam. You should also spend an appropriate amount of time outside of class as well.