

## AP Chemistry Course Syllabus

**Course Description** This AP Chemistry course is designed to be the equivalent of the general chemistry course usually taken during the first year of college. For most students, the course enables them to undertake, as a freshman, second year work in the chemistry sequence at their institution or to register in courses in other fields where general chemistry is a prerequisite. This course is structured around the six big ideas articulated in the AP Chemistry curriculum framework provided by the College Board. A special emphasis will be placed on the seven science practices, which capture important aspects of the work that scientists engage in, with learning objectives that combine content with inquiry and reasoning skills. AP Chemistry is open to all students that have completed a year of chemistry who wish to take part in a rigorous and academically challenging course.

**Required Materials:** Calculator, 3-ring binder

### Course Outline

Term 1			
Unit	Topic	Zumdahl Chapter(s)	Duration
1	Atomic Structure & Periodicity w/ Descriptive Chemistry	7 20 - 21	2 weeks
2	Bonding	8 & 9	2 weeks
3	States of Matter and IMFs	10 & 11	2 weeks
4	Stoichiometry and Types of Reaction	1 - 3	2weeks

Term 2			
Unit	Topic	Zumdahl Chapter(s)	Duration
5	Solution Chemistry	4	2 weeks
6	Gases	5	2 weeks
7	Kinetics	12	2 weeks
	Review for Semester Final	1 - 11	2 weeks

Term 3			
Unit	Topic	Zumdahl Chapter(s)	Duration
8	Thermochemistry	6 & 17	2 weeks
9	Equilibrium	13 & 16	2 weeks
10	Acid / Base Chemistry	14 & 15	3weeks
	Review for CTA	1 - 16	2 weeks

Term 4			
Unit	Topic	Zumdahl Chapter(s)	Duration
11	Electrochemistry	17	2 weeks
12	REVIEW: Prepare for AP Chem Exam MAY 9, 2019	1 - 21	4 weeks
13	Organic Chemistry and Biochemistry	22 & 23	2 weeks

**There are 6 Big Ideas that will be the core focus of AP Chemistry.**

**Big Idea 1:** Structure of matter

**Big Idea 2:** Properties of matter-characteristics, states, and forces of attraction

**Big Idea 3:** Chemical reactions

**Big Idea 4:** Rates of chemical reactions

**Big Idea 5:** Thermodynamics

**Big Idea 6:** Equilibrium

### **Curricular Requirements**

**CR1** Students and teachers use a recently published (within the last 10 years) college-level chemistry textbook.

**CR2** The course is structured around the enduring understandings within the big ideas as described in the AP Chemistry Curriculum Framework.

**CR3a** The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 1: Structure of matter.

**CR3b** The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 2: Properties of matter-characteristics, states, and forces of attraction.

**CR3c** The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 3: Chemical reactions.

**CR3d** The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 4: Rates of chemical reactions.

**CR3e** The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 5: Thermodynamics.

**CR3f** The course provides students with opportunities outside the laboratory environment to meet the learning objectives within Big Idea 6: Equilibrium.

**CR4** The course provides students with the opportunity to connect their knowledge of chemistry and science to major societal or technological components (e.g., concerns, technological advances, innovations) to help them become scientifically literate citizens.

**CR5a** Students are provided the opportunity to engage in investigative laboratory work integrated throughout the course for a minimum of 25 percent of instructional time.

**CR5b** Students are provided the opportunity to engage in a minimum of 16 hands-on laboratory experiments integrated throughout the course while using basic laboratory equipment to support the learning objectives listed within the AP Chemistry Curriculum Framework.

**CR6** The laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Chemistry Curriculum Framework. At minimum, six of the required 16 labs are conducted in a guided-inquiry format.

**CR7** The course provides opportunities for students to develop, record, and maintain evidence of their verbal, written, and graphic communication skills through laboratory reports, summaries of literature or scientific investigations, and oral, written, and graphic presentations.

#### Grading Scale

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A=90-100 B=80-89 C=70-79 D=65-69 F=below 64 I=Incomplete  
Tests: 55%      Daily grades: 35%      Term exam: 10%

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**Course Expectations:** You are expected to complete all class work and attend class regularly to be successful in this class. You are also expected to keep all class work throughout the term as your proof that the assignment was graded, checked and/or completed. You are expected to study and to review notes daily in preparation for unit tests. You are expected to ask questions about material/concepts you do not fully understand. You are expected to keep up with your chemistry formula sheet and to bring it and a calculator to class daily. Finally, you are expected to take ownership and responsibility for your own learning, your work, and your grades in this class.

**Days Available:** Any day before or after school upon request and subject to availability. Waiting until the last minute to get extra help does not constitute an emergency on my part, so understand that I may not be available to help you just because you waited until the day before the test to ask me about “everything” in that unit. If you want to come in for extra help, I expect that help to take priority over any extracurricular activities and to not have to wait around for you to arrive.

**Tests:** **Unit tests** are given after every major unit and **account for 55% of your term grade.** Unit test format will mimic the format for the AP test meaning both multiple choice and free response questions. Tests will last two days, with day 1 testing just multiple choice questions and day 2 testing just free response questions. Dates for tests will be posted on the board and entered into the google classroom calendar.

**Retesting:** In order to retest, you cannot have any zeroes on work related to the unit being tested. Any work missed due to absences for that unit should be made up prior to testing. Once your test is returned to you, you will be given time to complete test corrections to show me that you understand what you missed and that you know the correct response. This must be done in my classroom after school, however you are not restricted to “reteach/retest” days. You may make corrections any day of the week, granted that I am available. You must complete all parts of the correction process correctly in order to earn back points on your test.

**Daily/Class Work/Homework:** Classwork/homework is an integral part of this class and accounts for 35% of your term grade. **Assignments are posted on the board and to google classroom.** Homework will be assigned almost daily and will consist of textbook problems, worksheets and possibly online problems. Not all homework will be graded, but it will be reviewed as needed in class. Failure to do homework will result in you not being able to reteach/retest.

**Late & Makeup Work:** Work is due when it is due and no late work will be accepted. Any work not turned in on time will not receive a grade unless cleared by me before the due date. All district policies regarding missing work due to absences will be followed. Work assigned before an absence should be turned in when you return to school if it was due on the day you were absent. If you have been informed of a test prior to being absent, you are expected to take the test upon your return to school. Make-up tests will be given after school and will be different from the original test. Any handouts given out while you are absent will be placed in the appropriate folder on the make up work board. You should first ask students at your table what work was done and then ask me if there are any other questions.

**Term Exam:** The term exam accounts for 10% of your term grade.

**Labs** The labs completed require following or developing processes and procedures, taking observations, and data manipulation. See lab list provided for lab details. Students communicate and collaborate in lab groups; however, each student writes a laboratory report in a lab notebook for every lab they perform. A minimum of 25% of student contact time will be spent doing hands-on laboratory activities. [CR5a]

**AP Chemistry Lab List** The following labs will be completed during the school year. Guided Inquiry Labs are indicated with an asterisk (\*).

1. Physical Separations (distillation, recrystallization, chromatography)
2. Gravimetric Analysis
3. \* Spectrophotometric Analysis of Percent Copper in Brass (INV 2)
4. Graphing Heating and Cooling Curves and Phase Diagrams
5. Coffee Cup Calorimetry
6. \* Hand Warmer Challenge (INV 12)
7. Determination of Enthalpy of Reaction
8. Activity Series of Halogens
9. Quantitative Chromatography
10. \* Determine Type of Bonding in Unknown Chemicals (INV 6)
11. \* Spectrophotometric Determination of Rate Law (INV 11)
12. Determination of Equilibrium Constant
13. \* Qualitative Illustration of LeChatlier's Principle (INV 13)
14. \* Determine amount of Acid in Beverages via Titration (INV 4)
15. \* Do Household Products Buffer? (INV 15)
16. Construction of a Voltaic Cell
17. \* Beer's Law: Concentration of Dye in Sport's Drink (INV 1)
18. Determining  $K_a$  for a weak acid

**Textbooks and Lab Books (Provided to you)**

The College Board. AP Chemistry Guided Inquiry Experiments: Applying the Science Practices. 2013.

Zumdahl, Steven and Susan Zumdahl. Chemistry, Tenth Edition. Belmont CA: Cengage Learning, 2017. [CR1]

**Additional Information:**

**Contact information:** [Katherine.Odom@biloxischools.net](mailto:Katherine.Odom@biloxischools.net)

It is easiest to contact me by email. So, if you have any questions or concerns, please send an email and I will get back with you as soon as possible.

Join my Google Classroom! I'll use this platform to accept all formal lab reports and post assignments for each unit throughout the year. There is a Google calendar to keep us all on the same page and a copy of this syllabus will be shared there for future access.

To get vocabulary practice, find me on Quizlet, katielynnodom, and join my AP Chemistry class.

**The 10 Parts of a Laboratory Report [CR7]**

All labs are to be recorded in each student's Laboratory Notebook. One lab will be selected each term to be formally typed and submitted. Students must follow this format and label all sections very clearly. AP Chemistry lab reports are much longer and more in depth than the ones completed in the first year chemistry course. Therefore, it is important that students don't procrastinate when doing pre-lab and post-lab work. Late labs will not be accepted. Labs not completed in class must be done after school or on Saturdays by appointment.

**Pre-Lab Work:** Pre-lab work is to be completed and turned in on the day the lab is performed.

1. **Title** The title should be descriptive. For example, "pH Titration Lab" is a descriptive title and "Experiment 5" is not a descriptive title.
2. **Date** This is the date the student performed the experiment.
3. **Purpose** A purpose is a statement summarizing the "point" of the lab.
4. **Procedure Outline** Students need to write an outline of the procedure. They should use bulleted statements or outline format to make it easy to read. If a student is doing a guided inquiry lab, they may be required to write a full procedure that they develop.
5. **Pre-Lab Questions** Students will be given some questions to answer before the lab is done. They will need to either rewrite the question or incorporate the question in the answer. The idea here is that when someone (like a college professor) looks at a student's lab notebook, they should be able to tell what the question was by merely looking at their lab report. It is important to produce a good record of lab work.
6. **Data Tables** Students will need to create any data tables or charts necessary for data collection in the lab.

### **During the Lab**

1. **Data** Students need to record all their data directly in their lab notebook. They are NOT to be recording data on their separate lab sheet. They need to label all data clearly and always include proper units of measurement. Students should underline, use capital letters, or use any device they choose to help organize this section well. They should space things out neatly and clearly.

### **Post Lab Work**

1. **Calculations and Graphs** Students should show how calculations are carried out. Graphs need to be titled, axes need to be labeled, and units need to be shown on the axis. To receive credit for any graphs, they must be at least  $\frac{1}{2}$  page in size.
2. **Conclusions** This will vary from lab to lab. Students will usually be given direction as to what to write, but it is expected that all conclusions will be well thought out and well written.
3. **Post Lab Analysis Questions** Follow the same procedure as for Pre-Lab Questions.