

AP Chemistry

Mr. Luke Johnson

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Course Description/Information, 2015-2016

The Advanced Placement Chemistry course is a second year course in chemistry, and is roughly equivalent to a freshman level lecture and laboratory course at a competitive university. Students should have done well and shown an interest in a first year Chemistry course, and ideally will be concurrently enrolled in either Pre-Calculus or Calculus.

Meetings: Period 5, Monday, Tuesday, Wednesday, and Friday. Flex on **Wednesday** will be used for labs or longer class periods.

Textbook: Principles of Modern Chemistry, 7th ed., Oxtoby, Gillis, Campion

Lab Materials: Safety glasses and Lab Aprons- (provided)

Other Materials: Scientific Calculator (does not have to be graphing, but can be)
3-ring Binder for notes and Lab Materials

Classroom and Laboratory Expectations

Extensive laboratory work is central to the advanced placement chemistry course. The students' experiences in the laboratory provide a hands-on connection to the concepts presented in class, the chance to test their understanding of the concepts, as well as experience in synthetic, analytical, and separation techniques employed in Chemistry. To accommodate the laboratory program, additional periods are scheduled into the academic calendar.

Additionally, several laboratory exercises performed throughout the year are open-ended "Chemistry Challenges," on which students are challenged to use the underlying chemical principles to fulfill a given objective (i.e. produce the coldest reading on a lab thermometer, create an electrochemical cell with a specific voltage, or prepare a solution with a stated value of pH). Students will be evaluated on the success of their efforts, but also on their self-analyses of each attempt. Help is readily available, but it will be essential that students prepare thoughtfully for each exercise.

It is my hope that students will learn and appreciate the theory and the practice of chemistry. This will best be accomplished through diligent and thoughtful preparation for every class period, active participation in class discussion, and the student's willingness to be open and thorough in their search for a better understanding. A great deal of outside homework and reading will be assigned. However, this work will often not be graded directly- it is assigned for the student to practice and test their understanding of the material, and to come prepared for class with background knowledge and armed with questions. Doing this work is crucial to the students' ability to do well in the class, in the labs, and on the AP exam.

Grading

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| Quizzes, Problem Sets (approx. every week) | 15% |
| Unit Tests (approx. every 4-5 weeks) | 35% |
| Laboratory (performance, reports) | 35% |
| Final Comprehensive Exams | 15% |

As stated before, homework will have a direct effect on your ability to participate in class and further your comprehension of the material. The breakdown of grading weights may change slightly.

Late Policy. Work is expected to be turned in on time. You will lose 10% every day an assignment is late. Excused absences and extenuating circumstances will be dealt with as needed.

Tardies: You will be permitted 3 "free" tardies each quarter. After that you will be referred to the DRB. Missing more than 15 minutes of a class with no valid excuse will constitute a class cut.

I truly hope you will enjoy this class. It will be challenging, but will give you a deeper understanding of chemistry and the world around us. If you ever need help, don't hesitate to speak up. Concepts in this class build upon each other, and you do not want to fall behind. Communication is essential in this, and all your classes.

Approximate timeline of the course:

1st semester

Unit I - 4 weeks

Intro to atomic theories, chemical formulas and equations, yields, percent composition, lab methodology for identifying unknowns

Unit II - 5 weeks

Atomic theories, quantum theory, bonding theories, atomic and bonding properties

Unit III - 5 weeks

Kinetic molecular theory, gas laws, phase transitions

2nd semester

Unit IV - 3 weeks

Thermodynamics - calorimetry, enthalpy, entropy, free energy

Unit V - 6 weeks

Equilibrium - acid-base reactions, solubility equilibria, electrochemistry

Unit VI - 4 weeks

Kinetics and nuclear processes