

## **Advanced Placement Chemistry 2017**

### **Quessenberry**

#### **Course Description:**

The purpose of Advanced Placement Chemistry is to provide a college level course in chemistry and to prepare the student to seek credit and/or appropriate placement in college chemistry courses. This course meets four times per week for 58 minutes and once a week for 45 minutes. Hands on laboratory experiments and manipulation and analysis of data are performed 5-8 days in a month, approximately 25% of the class time. Emphasis is placed on depth of understanding of a topic, rather than breadth of topics. Class time consists of short lectures, question/answer sessions, inquiry packets (POGIL) and practice problems on non-lab days. One day prior to each chapter test is spent in review.

#### **Objectives:**

Students will:

- Learn the inquiry process through numerous laboratory investigations.
- Gain an understanding of the six big ideas as articulated in the AP Chemistry Curriculum Framework.
- Apply mathematical and scientific knowledge and skills to solve quantitative, qualitative, spatial, and analytic problems.
- Formulate strategies for the development and testing of hypotheses.
- Use basic statistical concepts to draw both inferences and conclusions from data.
- Identify implications and consequences of drawn conclusions.
- Use manipulative and technological tools including Pasco probes and GLX data collectors.
- Measure, compare, order, scale, locate, and code accurately.
- Learn to think critically in order to solve problems.

#### **Textbook, Laboratory Manual, and Study Guides:**

Brown, Theodore L., et al, Chemistry the Central Science, 11<sup>th</sup> edition. New Jersey, Pearson Prentice Hall, 2009.

Shakashiri, Bassam and Rodney Schreiner, Workbook for General Chemistry, 3rd Edition, Madison, Wisconsin, Stipes Publishing, 2004.

Vonderbrink, Sally. Laboratory Experiments for AP Chemistry. Batavia: Flinn Scientific, 2001.

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

#### **Laboratory Work:**

Most of the laboratory experiments in this course are hands-on. Students work in small groups for each lab. They collect, process, manipulate, and graph data from both qualitative and quantitative observations. Inquiry is emphasized in many of the experiments that students complete. The laboratory work requires students to design, carry out, and analyze data using guided inquiry principles. For labs, students are required to understand the purpose, procedure, all data, data analysis, error analysis, results, and conclusions and submit a lab report for grading. Laboratory experiments are generally completed in one or two periods with final reports due a minimum of two days later.

#### **Laboratory Notebook:**

A laboratory notebook is required for the course. All completed lab reports (formal and informal) must be included in the notebook. Students need a place to hold all of their completed lab assignments. Formal lab reports will include a title, the date, a purpose, the procedure outlined, preliminary questions, data tables (student developed or pre-provided), calculations and graphs, and conclusion/error questions. Informal lab reports may include preliminary questions, data and analysis.

Each lab report will be graded individually and the notebook is checked at the end of each semester. In the event that a lab is graded for the whole group, each student must still maintain a copy for his/her lab notebook.

### **Assessments:**

A unit test is given for each general topic, along with smaller quizzes along the way. Tests include questions similar to the free response and multiple choice questions on the AP exam (approximately 50% of each) and are timed. Many end of unit assessments will have re-takes available to enhance learning. Generally quizzes will not have re-takes available. Students will be notified of these opportunities well in advance. Students enrolled in the course are expected to take the AP Chemistry exam and participation is considered the final exam. Students who do not take the AP exam will take a comprehensive final exam in May.

### **Classwork and Homework Assignments include:**

On-line Mastering Chemistry – students must time manage.  
Group and individual critical thinking and problem-solving.  
Textbook readings – students must time manage.  
Lab Write-ups and preparation.

**Academic Grades** will be determined using a weighted average with 65% for assessments, 10% homework/classwork and 25% labs. Points may be deducted for late assignments in the lab or homework categories. The overall letter grade will be calculated using a modified scale with an understanding of the difficulty of the AP exam level unit tests and labs.

### **AP Exam Review:**

The final five to ten class days before the AP Chemistry Exam, **MAY 7, 2018**, are used for exam review. Students will work in cooperative groups to solve practice problems from previous exams and sit for an entire practice exam. I encourage students to engage in constant review throughout the year and starting in March, I will hold a series of evening review sessions.

### **Citizenship:**

Students who participate, follow safety rules, come to class on time and do not disrupt class are Satisfactory. In order to be considered Good or Excellent, a student needs to have a positive impact on the class by actively participating, assisting others, volunteering, having stellar attendance and generally going above and beyond. Students who do not follow safety rules will be recommended for suspension from the class. The school-wide effect of tardies and trancies on citizenship is outlined in the student handbook. Semester citizenship grades are calculated by averaging the three 6-week citizenship grades.

### **Academic Honesty:**

All students are expected to conduct themselves with the highest academic integrity. It is a disservice to everyone when a student cheats. Any student participating in the following will be considered in violation of the academic honesty policy as outlined in the student handbook:

- Cheating on tests or assignments, which includes giving answers to other students as well as taking them.
- Plagiarism – copying of any sort.
- Theft or alteration of classroom materials

Consequences for violating this policy may include a zero on the assignment, a U in citizenship for the six weeks and an F/U in the course for the semester. To avoid any impression of impropriety, students will NOT be allowed to use a graphing calculator on any exam unless the RAM has been cleared.

### Communication:

If I have concerns about a student's progress or behavior, I will first counsel with the student. If after talking with the student, the situation has not resolved itself I will contact parents. If the situation continues I will contact the counselor and perhaps have a conference to try and clear up the issue.

I am always available via e-mail to discuss grades, citizenship or content with parents and students at [mquessenberry@sandi.net](mailto:mquessenberry@sandi.net). This is the best way to communicate with me. I am generally available during lunch for tutoring or talking Tuesday-Thursday. I will have before or after-school tutoring as needed. I can also be reached by phone at (858) 475-3040 x149. I will return messages within 24 hours of receipt. I have all assignments listed at <http://mrsq.net> and parents and students can check grades on Power School.

### Approximate Course Outline:

#### Chapters in Brown Chemistry

1. Matter and Measurement
2. Atoms, Molecules, and Ions
  
21. Nuclear Chemistry
3. Stoichiometry
4. Aqueous Reactions and Solution Stoichiometry
5. Thermochemistry
- 6,7. Electronic Structure of Atoms and Periodic Properties of the Elements
8. Basic Concepts of Chemical Bonding
9. Molecular Geometry and Bonding Theories
10. Gases
11. Intermolecular forces, Liquids and Solids
13. Properties of Solutions
14. Chemical Kinetics
15. Chemical Equilibrium
- 16,17. Acid-Base Equilibria and Additional Aspects of Equilibria
19. Chemical Thermodynamics
20. Electrochemistry
22. Chemistry of Nonmetals (break)
23. Metals and Metallurgy (break)
  
25. The Chemistry of Life: Organic and Biological Chemistry (break)
- AP Chemistry Exam Review

#### AP Chemistry Topic Covered

- None
- Atomic Theory & Atomic Structure (**BI 1 & 2**)
- Nuclear Chemistry
- Stoichiometry (**BI 3**)
- Rxns and Stoichiometry (**BI 3**)
- Thermodynamics (**BI 5**)
- Atomic Theory & Atomic Structure (**BI 1 & 2**)
- Chemical Bonding (**BI 1 & 2**)
- Chemical Bonding (**BI 1 & 2**)
- Gases (**BI 1 & 2**)
- Liquids and Solids (**BI 1 & 2**)
- Solutions (**BI 2**)
- Kinetics (**BI 4**)
- Equilibrium (**BI 6**)
- Equilibrium (**BI 6**)
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- Thermodynamics (**BI 5**)
- Reaction Types (**BI 3**)
- Descriptive Chemistry (**BI 2**)
- Descriptive Chemistry (**BI 2**)
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- Descriptive Chemistry (**BI 2**)
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- All

**(BI)** refers to Big Ideas. 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