

AP Chemistry Syllabus

2017-2018

- Instructor:** Dr. Gregory Fisher
- Textbook:** Masterton and Hurley. *Chemistry: Principles and Reactions, 8th edition.* (2016).
- E-mail:** gfisher@ridgefieldps.net
- Class Website:** <https://classroom.google.com/c/NTA3MDU4NDk3NVpa>
- Telephone:** (203) 894-5750 ext. 2214
- Office Hours:** Friday: 2:15-3:15, and by appointment (e.g., before school almost every day).

Welcome to AP Chemistry!

Course Objectives: AP Chemistry is the equivalent of the general chemistry college usually taken during the first college year. Like a first year chemistry course, AP chemistry explores the behavior and properties of matter. Extending upon topics presented in first year chemistry, the AP chemistry course is designed to answer these and many other questions.

- How does observed behavior support current atomic theory?
- How are patterns of bonding related to the behavior of substances?
- How can the macroscopic behavior of gases, liquids and solids and solutions be explained at the molecular level?
- What factors influence the stability of a substance?
- What factors are involved in whether or not a reaction will occur? To what extent will reactions occur? Why will some reactions not occur or occur only slowly?
- How are energy changes related to the nature of chemical reactions and the observed behaviors of substances?
- What laboratory techniques are employed to discover the answers to these questions?

Note: The AP Exam is given at 8:00 a.m. on Monday, May 7, 2018.

Format of AP Exam:

| | | | |
|------------------|----------------------------------|-------------|-------------------|
| Multiple Choice: | 60 questions | 1 hr 30 min | 50% of Exam Score |
| Free-Response: | 7 questions | 1 hr 45 min | 50% of Exam Score |
| | 3-long, 4 short-answer questions | | |

Use of calculators:

- Multiple Choice: not allowed
- Free-Response: Graphing Calculators allowed (see AP Central for types allowed)

Resources:

1. Textbook and Student Study Guided (provided by RHS)
2. Graphing Calculator (e.g., TI-83)
3. 3-Ring Binder
4. Composition book (for lab work)
5. Print outs (from Google Classroom and Google Drive) on the day of the assignment.

Overall Rules: Safety First!

1. Be Respectful – of yourself, of others, of property
2. Do Your Job. Your job is to learn chemistry.
3. Your job is not done until all of the paperwork is completed and handed in, and everything is neat and clean and returned to its proper place.

It is assumed and expected that you know how to behave properly. The *RHS Student Parent Handbook* is an excellent reference; school policy will be followed. Inherent in any laboratory course, you must be aware of safety hazards, adhere to your signed safety agreement, and follow all of the teacher's directions.

Due Dates & Late Work:

Homework and Lab Reports are due at the beginning of the period on the day they are due.

- *Homework:* Late homework will result in a 50% loss of grade for one day late and will not be accepted thereafter. Exceptions may be made if you have an excused absence or otherwise valid reason (approved by the instructor) for which one day is allowed to make up the work for every day absent.

Most homework is assessed with a one-to-two "Homework Assessment" questions. These questions are based in the content from the homework but will slightly different (e.g., numbers, chemical compounds).

- *Lab reports* are due at the beginning of class on the due date. Late lab reports will be accepted with a 20% penalty for up to one week after the due date and 10% penalty for each week after that. Late lab reports will be accepted up to one week before the end of the marking period.
- *Quizzes* and *Exams* are to be made up within two days for every day you have an excused absence. No makeup exam will be available after that time period.

Grades:

The grade for the year is weighted as follows*:

| | | | | | | |
|------------|------------|-----------|------------|------------|-----------|-------------|
| <u>MP1</u> | <u>MP2</u> | <u>E1</u> | <u>MP3</u> | <u>MP4</u> | <u>E2</u> | <u>Year</u> |
| 20% | 20% | 10% | 20% | 20% | 10% | 100% |

(MP = marking period; E1, E2 = mid-year and final exams, respectively)

Each Marking Period is weighted as follows:

| | |
|---------------------------------------|-----------|
| Tests | 50% |
| Quizzes..... | 30% |
| Labs and Projects | 15% |
| <u>Homework and Class Work:</u> | <u>5%</u> |
| Total: | 100% |

Tentative Schedule:

| Rotation | Tentative Dates | Topics |
|----------|-----------------|--|
| 1. | 8/31 – 9/13 | 00. Course Introduction 01. Matter & Measurements 02. Atoms, Ions, Isotopes 18. Nuclear Reactions |
| 2. | 9/14 – 9/27 | 03. Stoichiometry |
| 3. | 9/28 – 10/10 | 04. Reactions in Aqueous Solutions |
| 4. | 10/11 – 10/23 | 05. Gases |
| 5. | 10/25 – 11/3 | 08. Thermochemistry 16. Thermodynamics |
| 6. | 11/4 – 11/17 | 11. Kinetics |
| 7. | 11/18 – 12/2 | 12. Equilibrium (Gas) |
| 8. | 12/5 – 12/14 | 13. Acids and Bases |
| 9. | 12/16 – 12/22 | Catch-up and Review |
| 10. | 1/2 – 1/18 | 14. Equilibrium (Acid-Base) |
| 11. | 1/19 – 1/30 | Mid-Year Exam 15. Complex Ions and Equilibrium (Precipitation) 19. Complex Ions |
| 12. | 1/31-2/12 | 16. Thermodynamics (cont.) |
| 13. | 2/13 – 2/26 | 17. Electrochemistry |
| 14. | 2/27 – 3/9 | 06. Electronic Structure & Periodic Table |
| 15. | 3/12 – 3/21 | 07. Covalent Bonds |
| 16. | 3/22 – 4/3 | 09. Liquids and Solids 10. Solutions |
| 17. | 4/4 – 4/23 | 20. Metals 21. Nonmetals 22. Organic Chemistry 23. Polymers: Natural and Synthetic |
| 18. | 4/24 – 5/4 | Review |

Ensuring Success in Chemistry: If you have a hobby or are involved in organized sports, then you already know the key to being successful in the activity: practice. In the same way you ensure success in a sport, continued practice in a course ensures that you learn well and achieve at a high level. In order to become proficient, which is your goal, you must commit to being actively involved, practice regularly and keep up as new ideas are investigated or new content is introduced.

It is expected that you have matured to a point where you understand the responsibility you have for your own learning. Taking an active role in your learning is necessary for successful completion of this or any other course. Active involvement in class also provides you with good practice in developing a lifelong pattern of setting high expectations for yourself and exploring ways to meet those expectations.

I encourage your development and provide you with methods of promoting success. But you must recognize that you are ultimately responsible for the quality of your achievements. Whether you're struggling with a specific topic or you're interested in further examination of a topic, there will be plenty of opportunities including online activities and study, after school tutoring and supplemental materials for review.

Grade Information: Assessment of your knowledge demonstrates what you can do: solve problems, explain physical phenomena from the atomic to macroscopic, predict what will happen, make appropriate models and analogies, justify your answers, perform laboratory work, etc. You will be given plenty of opportunities to demonstrate your competency in the course. Your assessment will be based on your ability to understand the material at the recall, application, performance and extension levels. Thus, you should focus your study to be able to:

- Show that you have an understanding of basic facts
- Show that you can apply the facts in a useful way
- Show that you can perform activities and procedures essential to understanding chemistry
- Show that you can explain relationships and observations in terms of several concepts
- Show that you can critically explore the material beyond what has been explicitly discussed
- Show that you can develop hypotheses that can be tested and supported through the use of the scientific method and analyze laboratory data

Assessment: The philosophy of the assessment program is two-fold:

- 1: To present to the student a fair and accurate measure of his or her performance based on previously established learning objectives.
- 2: To evaluate strengths habits and/or remedial study of previous material.
- Before each major unit, an unrecorded quiz may be given to assess students' prior knowledge and create an anticipatory set. This will allow both students and teacher opportunities for tailoring units of study around student's abilities and interests.
- During each unit of study, recorded quizzes and tests will be given as needed to assess students' understanding of current. These will be used as formative assessments from which adjustments in pacing or instructional methods can be decided.

- You should expect an amount of practice that ensures appropriate practice of material to allow for your mastery of content. Only with adequate practice will you be prepared to score highly on the AP Chemistry exam. The assigned problems provide a minimum of practice that generally prepares students well. You are encouraged to complete all assigned work. Use classroom test scores to evaluate your need to complete additional unassigned problems and practice.
- Practice problems will be assigned at the beginning of each major unit of study, and it will be divided to provide recommendations for pacing. This course requires a minimum of 5-7 hours per week, and perhaps more if your performance suggests additional study is necessary.

For questions about an assignment, there are several options available:

- Ask in class. I see you every day and I enjoy talking with you, but you need to be an active participant in class. Learning is not a spectator sport.
- View the solutions provided in your text
- View the solutions in the instructor's Guide
- See me before school, during lunch, during my planning period or after school

Laboratory

- **Lab Safety** – Your study of chemistry will provide many opportunities for laboratory investigations. In a laboratory setting, your first priority is to maintain a safe environment for yourself, your classmates and other people in the building. The safety agreement outlines the behaviors expected, policies in effect and procedures to be followed in the laboratory setting by everyone in the lab. An accident here could cause serious injury or death. Therefore, a policy of zero tolerance for dangerous activity within the lab is in effect. Prior to beginning any lab work, you must complete the Wilton High School Lab Safety Quiz. You must achieve a 100% on this quiz to begin lab work.
- **Lab procedures** – Separate packets will be given to you that discuss the expectation of behavior in the lab and detailing the procedures for performance of lab investigations. You are expected to have these with you at all times. You will have a lab folder in which you may place them.
- **Pre-Lab Assignments** – Pre-lab assignments will generally surround your understanding of the concept of the current lab investigation or of general lab procedures relevant to a particular lab. These must be completed in your lab notebook and will be checked off before you start the lab. This assignment will contribute to your lab grade.
- **Laboratory Notebook** – At the conclusion of each lab, there will be questions to address. After completion, you should turn in raw data for the lab (in your lab notebook), which you will have formalized and analyzed in the lab follow-up activity.
- **Lab Performance** – Lab performance, including associated behavior and safety, will be assessed during the laboratory activities throughout the year. Usually there will be a lab quiz after completing most labs.