

KAP Chemistry—2009-2010

Hilliard Davidson High School

Mrs. Bloom

KAP Chemistry is a **college-level** chemistry course. It is a *second-year course*—students should have successfully completed Chemistry or Honors Chemistry in their sophomore or junior years of high school. It emphasizes chemical understanding, both quantitatively and qualitatively, in a laboratory setting. Students should have three credits in Math, credit in Biology, and Chemistry with a “B” or better average.

Students will earn one and one-half credits of AP level laboratory science. The course is taught as a “1 ½ block” course—students will alternate between single period and double period. The double period on alternate days will allow us to complete the more rigorous laboratory activities required by the KAP curriculum. Classes will either be 50 minutes or 104 minutes in length, with an average of 375 minutes of class time each week. The classes are arranged so that students may also take AP Physics or AP Biology in a total of 3 class periods (see diagram).

	Mon	Tues	Weds	Thurs	Fri	Mon	Tues	Weds	Thurs	Fri
Period 1	Sec. 1									
Period 2										
Period 3	Sec. 2									

Students will be able to earn college credit by scoring well on the AP Chemistry test **or** they may earn credit through Kenyon College by participating in the KAP program. The AP test will take place in early May; there is an additional fee for the AP test.

Major themes include **structure of matter** (atomic theory and structure, chemical bonding), **states of matter** (gases, liquids and solids, solutions), **reactions** (reaction types, stoichiometry, equilibrium, acids and bases, kinetics), **descriptive chemistry** (relationships in the periodic table), and **laboratory** (physical manipulation; processes and procedures; observations and data manipulation; communication, group collaboration, and the laboratory report.)

Types of Assessment...

Homework Students should be doing homework daily. Homework is graded on a sliding scale—students with higher test grades need to turn in less homework.

Free Response Questions are questions from old AP tests. All students must turn in Free Response questions.

Labs are done frequently. Since most occur on double-block days, students should try not to miss lab days. All labs must be completed to receive credit for the course. Some universities require students to submit a lab notebook or portfolio to receive college credit.

Quizzes are given frequently. The primary purpose of the quizzes is to make sure everyone is keeping up with the material.

Tests are given at the end of each unit. Tests will be similar in format to the AP Test in that there will be both multiple choice (no calculator) and open-ended questions (calculator permitted). Lab questions will be included on tests. Tests may be cumulative; tests may contain questions from earlier tests or quizzes. All students will take an in-class cumulative test. The grade is part of the fourth quarter.

Required Texts:

Hill, John. W, Petrucci, Ralph H, et. al., *General Chemistry*, 4th ed., Upper Saddle River, NJ: Pearson Education, Inc., 2005.

Vonderbrink, S. A., *Laboratory Experiments for Advanced Placement Chemistry*, Batavia, IL: Flinn Scientific, Inc., 1995

KAP Chemistry Free Response Practice Book designed for AP Chemistry classes in our school district

Supplies: Bound lab record book (provided as part of class fees), **approved safety goggles** (note—safety glasses are *not* an acceptable substitute for goggles), closed-toe shoes, scientific calculator (graphing calculator will prove most helpful), notebook with separated sections for notes and homework, pens, pencils, highlighters

KAP

Students who will have junior or senior status will have the opportunity to apply for admission to the KAP (Kenyon Academic Partnership) program. The program allows students to get college credit while still in high school. Students will have an official transcript from Kenyon College. Students who wish to enroll in KAP courses must be strongly motivated and should have demonstrated success in the subject areas they wish to pursue. Since KAP courses are demanding, readiness and willingness to work hard are essential for success. When students register for their courses, they must complete a separate application for the KAP program. The application includes a teacher recommendations and a transcript. There is an additional fee (\$100) for KAP. **Students participating in the KAP program will receive credit for the four following Kenyon courses, totaling 12 semester hours of college credit:**

Chemistry 121 Introductory Chemistry Lecture (0.5 Kenyon units; 4 semester hours)

Chemistry 123 Introductory Chemistry Laboratory (0.25 Kenyon units; 2 semester hours)

Chemistry 124 Biophysical and Medicinal Chemistry (0.5 Kenyon units; 4 semester hours)

Chemistry 125 Biophysical and Medicinal Chemistry (0.25 Kenyon units; 2 semester hours)

NOTES:

- Those who wish to may apply for KAP credit; acceptance into the KAP program is determined by Kenyon College. It is **not** necessary to be in KAP to be in the class.
- This course is **LAB-BASED**. We do, on average, a lab a week. Some have formal lab reports; others have data sheets.
- Although there is a biological focus to the second semester Kenyon courses, the major chemical topics (equilibrium, atomic structure and bonding, kinetics) are the same as a traditional second-semester chemistry course. Students enrolled in KAP will have the same coursework as those enrolled only in AP Chemistry, but may have additional laboratory activities.
- Students may earn a maximum of 3.0 Kenyon units while in high school.
- The class is graded on a weighted scale. Tests and quizzes are 55% of the grade, labs and projects 35%, and Free Response and homework are 10% of the grade. For students who receive a C or higher, KAP and AP courses at Hilliard Davidson High School receive an extra quality point when calculating grade point average. (A = 5.0, B = 4.0, C = 3.0, D = 1.0, F = 0.0)
- I will submit **four separate grades** to Kenyon College. Students receive separate lecture and lab grades for each semester. These grades are **not** figured into the Davidson GPA and may be different than the grade on the student's Davidson report card.

Academic honesty:

Students often work together in advanced science classes. This is valuable and I encourage working together. HOWEVER, copying another person's homework, lab report, or answers to any other sort of assessment is CHEATING. While you and your lab partner will share data, you need to do your OWN calculations and your OWN analysis. Using unapproved outside resources is also cheating. You will not receive credit for an assignment or assessment if you cheat.

Example: You do not know how to approach solving an old AP Test question that you have for homework. What should you do?

- | | |
|--|---------------------|
| a) Search the internet for the answer | NO—that is CHEATING |
| b) Search the internet for another explanation of the topic | YES—good idea! |
| c) Copy the answer from your friend or older sister | NO—that is CHEATING |
| d) Tell your friend you could do a, b, and c but are stuck on d.
Ask your friend to point you in the right direction. | YES—good idea! |
| e) Steal the answer key from your teacher | NO—that is CHEATING |
| f) Ask your teacher for help a day or two before the due date | YES—good idea! |

- h) Ask your teacher for help a day or two after the due date
- i) Cry
- h) Ignore it and hope it goes away.

Better late than never, but your teacher might get annoyed
 Okay for the short term, but you still need to figure out the answer!
 NO—it won't go away, and neither will your teacher

Labs

Laboratory investigations are a core component of every chemistry course. Students will complete many labs throughout the year. Students will work with many chemicals that should be safe if used properly but may be extremely dangerous if used improperly. Therefore, it is essential that students understand the laboratory procedures. Most lab activities require a minimum of two class periods. Therefore, it is in your best interest to **BE IN CLASS DURING LABS!** If you miss class due to illness, you will be able to make up the activity at pre-arranged times throughout the year.

- You will be expected to know and observe safety rules **every** time we are in the laboratory. You will not be permitted to participate in labs until your safety contract is on file.
- **READ THE LAB AND COMPLETE PRELAB** before class. You should have the prelab questions completed in your lab notebook and data tables ready to go. Prelab quizzes should be completed *before* you begin the lab activity. You will waste valuable time if you need to complete these in class, before starting the lab activity.
- You should come to lab **DRESSED APPROPRIATELY**, including **SAFETY GOGGLES, APRONS, and CLOSED-TOE SHOES**. If you do not have a pair of approved safety goggles, you should buy a pair from the school store. If you are not wearing your goggles during a lab, you will receive **one** reminder. If it is still a problem, you will be asked to sit down and lose credit for that lab experiment.
- **Food and drink are never permitted in a laboratory. This includes bottles of water, pop, etc.**
- Participation in lab includes being prepared, following directions, observing **SAFE** procedures, **CLEANING UP** the lab and equipment, and protecting equipment. Messy labs are dangerous labs, and leaving a laboratory bench in such a condition will affect your grade.
- **ABSOLUTELY NO HORSEPLAY.** This type of behavior will result in removal from class, a phone call home, and possibly a disciplinary referral.
- If you choose not to follow any of the class requirements, laboratory privileges may be revoked. You will be given written lab assignments for partial credit.
- You must keep a portfolio of lab reports and the laboratory notebook with original data. A suggested method is a three-ring binder.

About tests and quizzes:

- Tests and quizzes serve several purposes: they are typically viewed as a way for me to evaluate your progress, but they are also learning experiences for students.
- Tests will always be announced at least two days prior. Quizzes will almost always be announced. They may be written or lab-based.
- To receive full credit on tests and quizzes, show all calculations. Explain your answers completely and concisely—explanations help me to understand your thoughts.
- Each new test will include material from previously studied chapters as well as the summer review. Quizzes over earlier material will appear throughout the year.
- Tests will often include sample free response questions from old KAP Chemistry tests

Students should be able to

- Apply first-year chemistry Essential Outcomes to new situations.
- Use safe chemical practices when working in the laboratory.
- Display proficiency with a variety of laboratory skills and a variety of laboratory equipment.
- Use technology when appropriate to solve chemical problems (both written and in the laboratory.)
- Predict products of word equations by understanding classification schemes of reactions and write the reaction using correct chemical formulas.
- Use stoichiometry as a tool to make quantitative predictions about a variety of chemical reactions.
- Use a variety of methods (such as titrations, freezing point depression, percent composition, empirical formulas, vapor density, and others) to determine the molar mass and molecular formula of an unknown compound.
- Understand the nature of gases and use gas laws to make quantitative calculations.
- Understand that atomic structure is the basis of the chemical and physical behavior of matter including radioactivity.
- Apply their knowledge of atomic structure to determine chemical structures and to explain chemical and physical observations and trends in the periodic table.
- Understand the nature of equilibrium, both quantitatively and qualitatively, in terms of gas-phase reactions, acid-base reactions, complex-ion formation, solubility, solubility, and electrochemistry.
- Understand how free energy (ΔG) drives chemical reactions and understand its relationships to enthalpy (ΔH), entropy (ΔS), and equilibrium.
- Use kinetics to evaluate whether a mechanism is possible.
- Explain how reduction-oxidation reactions generate electric current and make predictions about the chemical energy produced by or required for a chemical change.
- Differentiate between ionic, covalent, network covalent, and metallic bonding and describe characteristics of each.
- Understand intermolecular forces and their effects.
- Understand the nature of solids, liquids, and solutions both quantitatively and qualitatively.