Dougherty High School AP Chemistry Syllabus

AP® Chemistry Class Policy

* **Instructor:** Mrs. Farmer
* **Email:** [sfarmer@srvusd.net](mailto:sfarmer@srvusd.net), Schoology also has a messaging feature
* **Mrs. Farmer’s website:** [www.mychemistryclass.net](http://www.mychemistryclass.net)
* **Sign up for REMIND APP:** download REMIND APP to join @apchemfarm class (or txt @apchemfarm to 81010)

**Textbook** -

Chemistry, A Molecular Approach 4th Ed. – Tro – Pearson Prentice Hall – *e*text

Mastering Chemistry – Online supplement to the course

**Laboratory Experiments**

The laboratory experiments represent a collection of labs from various sources

* Flinn Scientific Inc. Advanced Placement Chemistry Laboratories
* College Board AP**®** Chemistry: Guided-Inquiry Laboratories
* Juniata College, Science in Motion, Advanced Placement Labs
* Advanced Chemistry with Vernier

**Overview of AP Chemistry Program**

Dougherty Valley HS offers three sections of AP Chemistry. The class meets four (4) days a week including one 88 minute block period. This block day is devoted for lab experiments; Inquiry and normal experiments plus a second day (51 min period) as needed. Throughout the school year, 25%**+** instructional time will be devoted towards laboratory experiments. The other days are geared towards lectures, practice problems, experiment continuation, and interactive activities.

AP Chemistry is a 2nd-year course. You should have already completed Honors Chemistry

**<**The ***expectation*** is that all AP Chemistry students will sign up and take the AP Chemistry Exam**>**

**Course Description:**

AP Chemistry is designed to be the equivalent of the general chemistry course usually taken during the first year of college. The goal is to provide the student with a strong background in many of the basic topics covered in chemistry. The objective of this class is to prepare each and every student to be successful on the AP Chemistry Exam given by the College Board in May. **Please note, an actual college chemistry class would involve more hours of instruction time per week than our current schedule, to compensate, additional time, outside of scheduled class time, will be required. This includes two Saturdays in April prior to the exam. Finally, if you do not have several hours each week to devote to lab reports, homework, and studying do not take this class.**

Since this is a second year course, students have a sound previous knowledge of:

Δ Atomic Theory Δ Molar Relationships Δ Electronic Structure

Δ Periodicity Δ Molecular Geometry Δ Gas Laws

Δ Solutions & Colligative Props. Δ Nuclear Chemistry Δ Intra/Intermolecular bonding

The following concepts’ increase in complexity or unfamiliar nature makes it necessary for more time covering them:

Δ Equilibrium Δ Chemical Kinetics (Mechanisms, Integrated)

Δ Thermodynamics (2nd Law, Gibbs) Δ Redox Reactions (Electrochemistry Δ Organic Chemistry

Δ Buffer, Acid-Base, Titrations Δ Coordination Complexes Δ Materials Science

**Classroom Behavior and Rules:** - *The DVHS Student Handbook is governing for Policies and Procedures*

**The student is expected to:**

1. Follow safe lab procedures and practices. Details will be forthcoming as safety is the number one priority.
2. Be on time, be organized, be prepared. Have pencils, pens, paper, textbook, and lab book in class when needed.
3. Be respectful and courteous of self, fellow classmates, your room, and your instructor. Comments concerning race, religion, appearance, or sexual preferences are unacceptable in this classroom.
4. Cheating will not be tolerated will result in a zero (**0)** for the assignment and can lead to further disciplinary actions. This includes copying homework, lab reports, and any misconduct during assessments.
   1. Any and All electronic devices except non-graphing calculators during assessments is prohibited
5. The use of any and all electron devices, excluding calculators, is prohibited during class time.
6. All other rules outlined in the Student Handbook are in effect.
7. Be **R**esponsible, Be **R**espectful, Be **R**esourceful

**Grades:**

Grades are used to evaluate how well the student has understood the course content. Exams, quizzes, homework, and labs are designed to reinforce concepts and their applications. Specific laboratory report and homework formats will be discussed in class. All assignments are due at the beginning of the period. If a student has an excused absence, homework will be due the day the student returns to class. The class is not graded on a curve; each student determines his or her own grade based on how many points they earn. Grades will be calculated each semester and are based as follows for the 1st semester:

**Graded Work:**

All evaluated classwork and homework is due at the beginning of the period of the day on which it is due unless specified otherwise. There will be **NO** credit given for late work. **[**Dougherty Valley High School will be following the District Homework Policy (AR 6154 and BP 6154), please see the Homework Policy on the District Website as well as the Dougherty Valley High School Web Site**] Please be advised that this policy is/can be different for Honors/AP Course**

**Mark your Calendars**: AP Chemistry Test Date 🡪 **MONDAY MAY 2nd @ 12PM**

|  |  |
| --- | --- |
| **Percentage of Class (Approx.)** | **Category** |
| 60% | Unit Tests, Mid-term, Semester Finals\*Δ |
| 20% | Lab Reports and Long Term Assignments  Formal Lab Reports (one per week based on lab performed during an 88 minute block)  Informal Lab Reports  → 25% of instructional time |
| 15% | Quizzes (Lowest score dropped) |
| 5% | Classwork/Homework |

**\***Very important part of the class. These tests will prepare you for the AP Exam in MAY

ΔDuring all assessments, no electronic device may on your person. All electronic devices will be put into the “cell phone parking lot at the front of the room. When/if any electronic device is found on the students’ person it will be assumed cheating on the assessment and the student will earn zero (0) credit for this assignment with no opportunity for a make-up. The teacher will return all electronic devices at the end of the testing period.

|  |  |  |  |
| --- | --- | --- | --- |
| **College Grading Scale\*^** | |  | These percentages are similar to a normal class. If you cannot perform on the tests you cannot get a good grade. Progress reports will be sent home mid-quarter as well as at the end of each quarter. Parents are welcome to email me about their students’ progress at any time. See full grading scale below.  Email is the **BEST** way for communication |
| **Percent (%)** | **Grade** |  |
| 90 | A |  |
| 80 | B |  |
| 70 | C |  |
| 60 | D |  |
| 59 and below | F |  |

**\***not on a curve. ^See page 9 for DVHS grading scale

**Classwork/Homework**

Grades in this category will be based on either completion or accuracy. Participation in class discussions and/or activity based work may also be graded. Work is not defined as only “worksheets.” Finally, points will not be earned if not working on the task assigned includes doing work for another class. Playing video games on your calculator is not a productive activity! Be on task, productive, engaged – those are all part of doing your classwork.

**Attendance:**

Daily attendance is essential to the students’ ability to stay current with the topics covered in class. If the student is absent, it is his or her responsibility to find out what was missed. Assignments that were due on the absent day are due when the student returns to class. Labs, quizzes, or tests missed due to an excused absence must be made up upon returning to class. *Please note that in order to be successful in this class additional time at lunch or after school could be required*.Make-up work is to be completed and turned in within the same length of time as the absence. If the length of the absence is exceeded, the work will not be accepted. It is your responsibility to find out about make-up work as well as make-up tests or quizzes. You will choose 2 “study buddies” in class whom you can call to find out such information. **Make-up assessments are given the day you return during your class period unless otherwise determined (they will be different format or questions, but will cover the same material)**. Any assignments or tests due on the day of a cut will receive a score of zero.

**Labs:**

Separate handouts concerning laboratory procedures and safety will be passed out and discussed in class. All students are required to have a **laboratory notebook.** Lab notebooks will be provided. Lab notebooks may be collected at the end of the semester and checked for write-ups on informal labs and demonstrations. **Our 88 min block period along with an additional 54 min block may be needed and could be devoted exclusively to performing hands-on labs. A formal lab report will be written for each of these labs.**

**Lab Report Guidelines**: A more detailed explanation of expectations and of each section will be given to you in class.

Each Formal Lab Report will consist of the following sections:

* Title
* Abstract (no more than 5 sentences summarizing each major section of the lab report)
* Introduction
  + Background Information (written in Ss own words)
  + Hypothesis
  + Problem to be answered
  + Equation(s)
* Experimental Procedure Followed during the experiment
  + What steps were followed
  + When to record observations
  + Diagram of apparatus (if needed)
* Data Table(s) to organize observations and measurements
* Calculations/Analysis
  + Show all calculation including units
  + All Symbols defined
  + Graphical Data - Titles, Labeled Axis, Slope calculations
* Discussion – Analysis of the Experiment
  + Post Lab questions and follow-up
  + Explaining how lab and results bring concepts together
* Conclusion
  + Report your results and try to tell why it turned out the way it did
  + Discuss how your results demonstrate basic principles of chemistry
  + Describe any errors that occurred during the experiment that may change your outcomes
* References
  + List all sources, e.g. lab manual, textbook, course packet, etc.
* Appendix
  + With a table of contents listing the items in the Appendix, include any paperwork used to prepare or used while performing the lab, such as any pre-lab worksheets, lab handouts or protocols, notes taken during the lab, etc.
* Organization/Formatting

**Final Note:**

The best way to make this course a success for yourself is to ask questions, spend time reading the book, take notes, participate in discussions, and work as many problems as possible over and beyond those assigned for homework. Problem solving in chemistry is a skill that can only be improved by practice. If you do not spend time on the homework you will not be successful when taking tests. I am excited about this year. I love chemistry and my hope is to get many of you to love it as well. Do not hesitate to ask for help. I am here to help you learn.

**Summer Assignment**Here is a link to the full AP Chemistry Summer Assignment. <https://tinyurl.com/y6wclmu5> Overview of Summer Assignment:

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| --- |
| **REMEMBER** |
| * Everything from Honors Chem! AP Chem mixes all topics together, your background knowledge in the Honors Chem topics is essential because they will appear inside other chapters starting the first week in AP! * All my Honors Chem materials are on the class website! ([www.mychemistryclass.net](http://www.mychemistryclass.net) 🡪 Honors Chem) |
| **KNOW** |
| * Solubility Rules, Common Ions, VSPER * All Reference Pages are on the class website ([www.mychemistryclass.net](http://www.mychemistryclass.net) 🡪 AP Chem 🡪 Reference Sheets) |
| **REVIEW** |
| * Stoichiometry, Kinetics, Equilibrium, Acid Base – **large part of AP CHEMISTRY!** * Chapters 1-4 in the Tro online textbook: Instructions on how to access it, must be logged in with school gmail account before clicking! <https://tinyurl.com/4yucsc26> |
| **LEARN** |
| * A little bit of Redox chemistry. We no longer have time to teach this in the Honors Chem class unfortunately. The practice work linked below will have some resources for you to learn a little bit about this chapter. * Any topics on the next pages marked with a (\*) as these may not have been taught in recent Honors Chem years due to a variety of reasons. * Any topics on the next pages that you missed due to absences, taking Honors Chem at a different school, etc. |
| **PRACTICE TURNED IN ON 1ST FRIDAY OF THE YEAR!** |
| * Summer Practice Problems – Link in copy of full summer assignment which is linked above. * Print worksheet and complete on binder paper, and correct (answers are linked at the top of the worksheet) * Show work if you want credit! |
| **CHECK TURNED IN ON 1ST FRIDAY OF THE YEAR!** |
| * Complete Self-Assessment Quiz for Ch. 1-4 once you have access to the online textbook.   + Link in copy of full summer assignment which is linked above.   + Print and complete. Answers at bottom to check/correct work.   + Show work for math problems.   + Annotate non-math problem 🡪 show/explain your thought process behind your answer choice. |

**See “Course Outline” on page 6 for order class will following during the year**

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit** | **Description**  **Content Skills** | **HW** | **Labs/Activities**  **Δ=**Inquiry **⊗=**Normal |
| **I:**  *Review Unit*  *Ch. 1, 2, 3, 4*  2 weeks | **Unit 1 is a review unit**:  This is material well covered in Honors Chemistry and by the summer assignment other students are required to complete  • *Matter and Measurements*: Classifying matter, dimensional analysis, and significant  figures  • *Atoms, Molecules, and Ions*: Atomic structure, formula writing, nomenclature, oxidation  states, etc.  • *Stoichiometry*: Mole, atomic weight, molecular formula, balancing equations, limiting  reagents, empirical formulas, percent composition, percent yield, and solution  • *Aqueous Reactions and Solution Stoichiometry*: Precipitation (net ionic), acid-base, redox, concentrations. | Approx.  20- 30 Book Q’s per week  Worksheets practice problems  Old FRQ’s | **⊗**Analysis of Silver in an Alloy – *Exp. 2 FLINN*  **Δ**#3: What makes Hard water Hard? – You will design and perform an experiment using gravimetric analysis to determine the stoichiometry of the reaction. You will create a precipitate in a chemical reaction, which you will separate from the solution via vacuum filtration using Buchner funnels (SP 1-7)  Chemicals Reactions Video Activity (**BI - #3**): You will make a narrated video for chemical reactions, showing how atoms are rearranged and/or reorganized |
| **II:**  *Gases*  *Ch. 5*  1.5 weeks | • ***Gases***:  Ideal gas law, van der Waal’s equation, Avogadro’s Law, STP, Dalton’s Law, Graham’s Law, kinetic theory of gases, real vs. ideal gases, etc…  • **Chemical Reactions** | Approx.  20- 30 Book Q’s per week  Worksheets practice problems  Old FRQ’s | ⊗#5: **The molar Volume of a Gas –** You will react Mg ribbon with HCl in a eudiometer tube to collect gas in that sealed tube over water. Taking measurements of mass, volume, and temperature, you will then determine what is the dry molar volume of that gas (SP 1-7) |
| **III:**  *Thermochemistry Ch. 6*  1 week | • ***Thermochemistry***:  The nature of Energy, Enthalpy, Thermodynamics of Ideal Gases, Calorimetry, Specific Heat, Hess’s Law, Standard Enthalpies of Formation (but not calculating ΔHrxn from them)  • **Chemical Reactions** | Approx.  20- 30 Book Q’s per week  Worksheets practice problems  Old FRQ’s | **⊗**#13 Determine the Enthalpy of a Chemical Reaction – You will use computer temperature probes to measure that heat released from 3 chemical reactions that you will perform. Two of those reactions can be added in some way on paper to get the 3rd reaction. You will verify that Hess’s Law holds by comparing your heats of reaction from 2 of the reactions to the heat of reaction of the 3rd since the 1st two should add up to equal the 3rd. (SP 1-7)  **Δ**#12: The Hand Warmer Challenge – You will design and perform an experiment using knowledge of calorimetry to design a hand warmer that will release energy based on given specifications using provided ionic compounds that are soluble in water (SP 1-7) |
| **IV:**  *Bonding and Molecular Structure*  *Ch. 8 + 9*  2 weeks | • ***Chemical Bonding***:  Chemical bonds, Electronegativity, Bond polarity and Dipole moments, Ions: E.C. (but not the exceptions), and sizes, formation of Binary ionic compounds, partial ionic character of covalent bonds. The covalent chemical bond: A model, covalent bond energies and chemical reactions, the Localized electron bonding model, lewis structures, resonance, exceptions to the octet rule, molecular structure: The VSEPR model.  **hybridization** (not including ‘d’ orbitals)  • **Chemical Reactions** | Approx.  20- 30 Book Q’s per week  Worksheets practice problems  Old FRQ’s | **VSEPR Activity (BI - #2)**: You will be given a list of chemical formulas and prepare 3D models to the various electro pair arrangements, and complete a table, which shos the Lewis Structure, electron-pair geometry, molecular structure, and use that information to predict the presence or absence of a dipole moment. You will build the molecules using gumdrop candy and toothpicks, taking into account how the lone pairs of electrons affect the shape. |
| **V:**  *Periodic Table, Atomic Structure Ch. 7*  1.5 weeks | • ***Atomic Structure***:  Atomic spectra, Bohr atom, quantum numbers, molecular geometry, hybrid orbital’s, electron configurations, periodic table, trends in the periodic table in terms of physical and chemical properties  • **Chemical Reactions** | Approx.  20- 30 Book Q’s per week  Worksheets practice problems  Old FRQ’s | Periodic Trends Graphing Activity (**BI - #1**) – You will graph “Atomic number vs XXXX” and interpret several data sets on atomic properties. Student will then discuss trends as they contribute to PES diagrams in identification of compounds.  Spectroscopy and Electron Configuration. Students will perform flame tests of various ionic compounds to see with spectroscopes the spectra that the metal elements produce. You will record those spectra, calculate their frequencies and energies, and determine the identity of an unknown by comparing to the spectral  fingerprints you have recorded. (SP 1-7)  **Δ**#1: What is the relationship between the concentration of a solution and the amount of Transmitted light through the solution – You will design and/or interpret the results of an experiment regarding the absorption of light to determine the concentration of an absorbing species in a solution (SP 1-7) |
| **VI:**  *Intermolecular Forces, Solids, Liquids*  *Ch. 10*  2 weeks | • ***Intermolecular Forces, Liquids, and Solids***:  Dipole–dipole interactions, hydrogen  bonding, London forces, liquid state, types of solids, metallic bonding, network solids, vapor pressure, change of state, phase diagrams  • **Chemical Reactions** | Approx.  20- 30 Book Q’s per week  Worksheets practice problems  Old FRQ’s | **Δ**#5: Sticky Q: How do you separate molecules that are attracted to one another? – You will design and/or interpret the results of a separation experiment in terms of relative strength of interactions among and between the components.(SP 1-7)  **⊗**Determining Melting Temperature - You will use a Vernier Melt Station to determine the melting temperature of a solid substance. Your sample will be one of several possible pure compounds. On subsequent trials you will be able to accurately determine the melting temperature of your sample, thus identifying the compound (SP 1-7) |
| **VII:**  *Properties of Solutions Ch. 11*  2 weeks | • ***Properties of Solutions***:  Electrolytes and non-electrolytes, molarity, molality, mole fraction, colligative properties, Raoult’s Law, Henry’s law, freezing point depression, boiling point elevation, and osmotic pressure.  • **Chemical Reactions** | Approx.  20- 30 Book Q’s per week  Worksheets practice problems  Old FRQ’s | **Δ**#4: Using Freezing-Point Depression to Find Molecular Weight – You will determine the molar mass of a solute by Freezing it. From the Freezing point depression and knowledge of the molality of the solution you will be able to calculate the molar mass of the solute compound (SP 1-7)  **⊗** Identification of Solutions – Juniata |
| **VIII:**  *Chemical Kinetics*  *Ch. 12*  2 weeks | • ***Chemical Kinetics***:  Reaction Rates, Rate laws: an introduction, determining the form of the rate law, the integrated rate law, rate laws: a summary, reaction mechanism, the steady-state approximation, a model for chemical kinetics, catalysis  • **Chemical Reactions** | Approx.  20- 30 Book Q’s per week  Worksheets practice problems  Old FRQ’s | **Δ**#11: What is the rate law of a the fading of Crystal Violet using Beer’s Law – You will use computers with spectrameters to observe that progress of a chemical reaction that involves a color change. By monitoring that rate of change in the absorbance’s of light through the reaction sample and using Beer’s Law, you will design how to determine the rate of the reaction and its order and perform the experiment (SP 1-7)  **⊗** Iodination of Acetone – The purpose of this reaction is to determine the orders for the reactants, the rate expression, and the rate constant for the reaction between iodine and acetone. – Junitata  Kinetics Graphing Activity (**BI - #4**) – You will determine the order of a reaction, rate law, rate constant, and half-life through the graphing of given concentration vs. time data for a reaction |
| **IX:**  *Chemical Equilibrium*  *Ch. 13*  2 weeks | • ***Chemical Equilibrium***:  Equilibrium constant, equilibrium expressions, calculations of K and equilibrium concentrations, Le Chatelier's principle, and how equilibrium is shifted by temperature, concentration, ICE tables, **intro to complex ions**, etc…  • **Chemical Reactions** | Approx.  20- 30 Book Q’s per week  Worksheets practice problems  Old FRQ’s | Equilibrium “Red Rover” **Activity** (**BI - #6**) – You will play a “game” in which the parts of the class (separated initially into 2 groups), switch places based on different conditions called out  **Δ**#13: Can we make the colors of the rainbow? – You will design and perform an experiment to investigate Le Chatelier’s principle by testing several systems at equilibrium and then selecting specific ones to produce the colors of the rainbow based on specific applications of this principle (SP 1-7)  **Δ**#15: To what extent to common household products have buffering activity? (SP 1-7)  **⊗**#10: Determination of Keq for FeSCN2+ - you will prepare a new series of solutions that have varied concentrations of the Fe3+ ions and the SCN– ions, with a constant concentration of H+ ions. You will use the results of this test to accurately evaluate the equilibrium concentrations of each species. (SP 1-7) |
| **X:**  *Acid / Base*  *Ch. 14 + 15*  2.5 weeks | • ***Acids-Bases***:  pH, Ka and Kb expressions, titration, degree of ionization, Kw expressions,  indicators, equivalence points, Arrhenius, Brønsted-Lowry and Lewis acid theories, and salt hydrolysis  • ***Aqueous Equilibria***:  Common-Ion effect, buffers, factors affecting solubility  • **Chemical Reactions** | Approx. 20- 30 Book Q’s per week  Worksheets practice problems  Old FRQ’s | **⊗**#8: An Oxidation-Reduction Titration: The Rx. Of Fe2+ and Ce4+ - You will conduct an oxidation-reduction reaction in this experiment in order to determine the amount of iron (II) ions in a solid sample of ferrous ammonium sulfate hexahydrate. (SP 1-7)  **⊗**#23: Determination of the Solubility Product of Ca(OH)2 – Your primary objective in this experiment is to test a saturated solution of calcium hydroxide and use your observations and measurements to calculate the *Ksp* of the compound. You will do this by titrating the prepared Ca(OH)2 solution with a standard hydrochloric acid solution. (SP 1-7)  **⊗** Determination of the Lead Content in Water. You will add varying amounts of potassium iodide in water from different sources to determine the concentration of lead ions originally dissolved within.  Analysis will require performing calculations with the Ksp of the slightly soluble lead iodide precipitate. (SP 1-7)  Whole-Class Discussion of the Societal Impact of Lead Content in Water (Societal Impact of Chemistry). You will  research and use that research in a whole-class discussion regarding the societal impact of lead content in water (tied in with the experiment described in the previous bullet). |
| **XI:**  *Chemical Thermodynamics*  *Ch. 16*  2 weeks | • ***Chemical Thermodynamics***: Spontaneous process and entropy, isothermal expansion and compression of an ideal gas, entropy and physical changes, entropy and the 2nd law. The effect of T on spontaneity, entropy changes in chemical reactions, the dependence of free energy on P, free energy and equilibrium  • **Chemical Reactions** | Approx. 20- 30 Book Q’s per week  Worksheets practice problems  Old FRQ’s | **⊗**#26 The Enthalpy of Neut. Of H3PO4  “Spontaneous or Not? **Activity (BI - #5**. – You will be given a set of data and will practice predicting and justifying the signs of ΔHrxn, ΔSrxn, and ΔGrxn. You will also determine the effect of varying temperature on those signs |
| **XII:**  *Electrochemistry*  *Ch. 17*  2 weeks | • **Redox &** ***Electrochemistry***:  Oxidation and reduction half-cells and equations, electrolysis, electrochemical (voltaic) cells, standard voltages, standard voltages from a table, Nernst equation, Faraday’s laws, writing redox equations, and balancing equations in acid/base solutions  • **Chemical Reactions** | Approx. 20- 30 Book Q’s per week  Worksheets practice problems  Old FRQ’s | **⊗**Electrochemistry: Voltaic Cells: You will construct voltaic cells to use voltmeters to determine the cell potentials for a series of metals and compare them to what your calculations of redox potentials say the potentials should be (SP 1-7)  **Δ**#8: How can we determine the Actual %’age of H2O2 in a Drugstore Bottle of H2O2? (SP 1-7)  **⊗**Electroplating a Nickel  **⊗**Electrolysis of KI |
| **XIII:**  *Nuclear Chemistry*  *Ch. 18*  <1 week | • ***Nuclear Chemistry***:  Nuclear Stability & Radioactive Decay, Nuclear Transformations,  Thermodynamic Stability of the Nucleus, fission & fusion.  • **Chemical Reactions** | Approx. 20- 30 Book Q’s per week  Worksheets practice problems  Old FRQ’s | Alpha, Beta, Gamma Activity |
| **XIV:**  *Organic Chemistry*  *Ch. 22*  <1 week | • ***Organic Chemistry***:  Naming, alkanes, alkenes, alkynes, functional groups, reactions involving hydrocarbons  • **Chemical Reactions** | Approx. 20- 30 Book Q’s per week  Worksheets practice problems  Old FRQ’s | Nomenclature, drawing compounds, model building |
| **XV:**  *Review for AP Test* | In the weeks prior to the exam the students will their **final exam** (currently the released exams) to get students acquainted with the test and to evaluate their knowledge. Review sessions include practicing FRQ from previous years. | Review |  |

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| --- | --- | --- | --- | --- | --- |
| **Course Outline (approx.)** | | | | | |
| **Semester I** | | | **Semester II** | | |
| **Big Idea** | **Chapters in Test** | **Unit from Above** | **Big Idea** | **Chapters in Test** | **Unit from Above** |
| **Review** | **1 – 4** | **I** | **2 Gases,** | **5** | **II** |
| **5** | **6, 17** | **III, XI** | **2 Solutions** | **12** | **VII** |
| **4** | **13** | **VIII** | **6 (Acid-Base)** | **15, 16** | **X** |
| **Mid-Term Exam** | | | **3 (Electrochemistry)** | **18** | **XII** |
| **6 (Equilibrium)** | **14** | **IX** | **Mock AP Exam (mid-term)** | | |
| **1** | **7, 8** | **V** | **If time – Organic** | **20** |  |
| **2 (Bonding)** | **9, 10, 11** | **IV, VI** |  |  |  |
| **Final Exam** | | | **Final Exam (MOCK AP TEST)** | | |

#### DOUGHERTY VALLEY HIGH SCHOOL GOALS

##### All students have the opportunity to access the full curriculum, extra-curricular activities, and community involvement.

1. Actively apply and strengthen relationships that foster respect and value diversity in a safe, clean and caring environment.
2. Staff will support students with special needs through collaboration, consistent communication, and professional development.

##### Implement consistent practices that provide a welcoming and responsive environment for students, staff, parents, and community.

**ACADEMIC HONESTY POLICY**

Honest behavior is an expectation at DVHS.  The purpose of the policy is to create and maintain an ethical academic atmosphere in which strong behavioral consequences will be enforced.  Teachers also address cheating and plagiarism in their course policies.  **Counselors will be notified of the incident and it may be disclosed on a student’s college application.  Staff will access *Turnitin.com* to review plagiarism information taken from websites.**

•     Copying from another student

•     Unauthorized collaboration on assignment

•     Using unauthorized materials/resources (spark/cliff notes, cell phones, calculators, etc.)

•     Submitting an essay written in whole or in part by someone else as one’s own

•     Preparing an essay or assignment for submission by another student

•     Copying an assignment or essay or allowing one’s assignment or essay to be copied by someone else

•     Using direct quotations, large sections or paraphrased material without acknowledgement

•     Buying or selling essays or assignments

•     Submitting whole or part of computer-generated documents or materials with or without minor modifications as one’s own

**Consequences for Academic Dishonesty will include appropriate disciplinary measures consistent with Board policy and the California Education Code.  One or more of the following consequences may occur.  Disciplinary consequences will be cumulative for only the current school year per class and will be noted in students discipline file.**

Examples include, but are not limited to:

1.        Parent /Guardian contacted by teacher

2.        Referral to assistant principal for disciplinary consequences; parent/guardian will be notified.

3.        Loss of all credit for the assignment or test with no makeup permitted.

4.        Upon second violation of 2nd degree cheating within the same course, the student may be dropped from the class.

5.        Monday School (3 hours)

6.        Suspension from school

## Please see the DVHS Student Handbook for complete list of consequences for 1st, 2nd, and 3rd Degree offenses.

#### NOTE

To be successful in Chemistry you must attend class regularly. In order to be successful in this class students must attend class, make productive use of time, turn in all assignments on time, take all tests and quizzes, complete labs and projects, and above all put forth a strong EFFORT.

* + *EFFORT* = *SUCCESS*

**Extra Help**

ACCESS on Wednesday and Thursday are so important! Please talk to me if you need to schedule a meeting at a different time.

**SCHOOL POLICIES & PROCEDURES** – *All policies/procedures will be followed from the DVHS Student Handbook*

**All school rules, policies, procedures, and disciplinary actions will be followed.**

**Please see the student handbook for further information.**

**Staff Communication Policy:** Email is the best way to reach me

As a guideline, any communication to staff, via email or telephone, should receive a response within 48 hours (excluding weekends and holidays). If there is no response within 48 hours, please email or call again stating this is the second attempt. The 48-hour guideline may be affected by illness, conferences, or technology problems.

**Line of Communication:**

Any questions or concerns regarding student progress in a class should be addressed through the following process:

1. Student communicating with teacher
2. Parent communicating with teacher
3. Parent/Student communicating with counselor
4. Parent/Student communicating with Assistant Principal
5. Parent/Student communicating with Principal

**Textbooks:**

Students are loaned a textbook based on the specific subject. The student and the parents are held financially liable for lost, stolen, damaged or destroyed textbooks. Students are charged the full replacement cost for items lost or damaged, since the school must pay the full replacement cost. All outstanding bills must be cleared before yearbooks, schedules, report cards or textbooks are issued to a student.

**Possession of Electronic Devices, MP3 Players, Cell Phones, Laser Pens at School:**

Possession of ANY electronic devices, including but not limited to cell phones, by a student at school is a privilege, which may be forfeited by any student who does not follow the pertinent school rules, district rules, and/or Electronic Device Policy below.  ANY electronic devices (cell phones, iPODS, MP3’S, video players, PSP’s, games, etc) may only be used before and after school and during lunch and brunch.  ANY and ALL **electronic devices are to be in the off mode and are not to be used, heard, or visible during class, passing periods, in the library, or computer labs.** Students may not use electronic devices if they leave the classroom to use the restroom, go to counseling, etc.  **Use of cell phones is prohibited in the locker rooms and bathrooms at all times.  Any electronic device violation during the school day will be subject to call or text/voice message search by administration.  The district/school shall not be responsible for the loss of or damage to a cellular phone, iPOD, or electronic device brought on campus.**

**First Offense:** Device confiscated until the end of the day. Parent called, **Detention** assigned.

**Second Offense:** Device confiscated, parent will be called.  Device returned when contact has been made with parent. **Monday School** assigned.

**Third Offense:** Device confiscated, parent contacted and **Suspension** assigned.  Further consequences may result in suspension.  Student loses ability to have device on campus for the remainder of the semester.

**DVHS Grading Policy**

|  |  |  |
| --- | --- | --- |
| **Grade** |  | **Percent** |
| A | = | 93% - 100% |
| A- | = | 90% - 92% |
| B+ | = | 87% - 89% |
| B | = | 83% - 86% |
| B- | = | 80% - 82% |
| C+ | = | 77% - 79% |
| C | = | 73% - 76% |
| C- | = | 70% - 72% |
| D+ | = | 67% - 69% |
| D | = | 63% - 66% |
| D- | = | 60% - 62% |
| F | = | Below 60% |

**DVHS School wide Learner Outcomes**

At Dougherty Valley High School, students will:

· Communicate effectively

· Become critical thinkers problem solvers who support ideas w/ reliable evidence

· Practice integrity, honestly, and ethical behavior as a global citizen

· Be a responsible partner in the learning process

· Take ownership of individual growth

**DVHS EXPECTATIONS**

All Students will…

1. Accept responsibility for your education, decisions, words, and actions.

2. Act in a way that best represents your school, parents, community and self to promote a safe, healthy environment in which to learn.

3. Be active in the school and community.

4. Maintain balance between academics, co-curricular activities and personal life.

5. Support your fellow students and their activities.

6. Respect cultural diversity, individuality, and the choices and rights of others.

**From the** [**AP Course**](http://www.collegeboard.com/student/testing/ap/exgrd_set.html) **Setting:**

### Comparability Studies

The AP Program periodically conducts college score comparability studies in all AP subjects. These studies compare the performance of AP students with that of college students in the courses for which successful AP students will receive credit. In general, the AP composite score cut-points are set so that the lowest composite score for an AP score of 5 is equivalent to the average score for college students earning scores of A. Similarly, the lowest composite scores for AP scores of 4, 3, and 2 are equivalent to the average scores for students with college scores of B, C, and D, respectively.

Students who earn AP Exam scores of 3 or above are generally considered to be qualified to receive college credit and/or placement into advanced courses due to the fact that their AP Exam scores are equivalent to a college course score of "middle C " or above. However, the awarding of credit and placement is determined by each college or university and students should check with the institution to verify its AP credit and placement policies.

Dougherty Valley High School will be following the District Homework Policy (AR 6154 and BP 6154), please see the Homework Policy on the District Website as well as the Dougherty Valley High School Web Site **– Please be advised that this policy is/can be different for Honors/AP Courses**

Advanced Placement Chemistry Summer Assignment

**Due Friday of the 1st Week of School**

**Summer Remind Group -** *send a text to:* 81010, *text this message:* @dvapsum, (Office Hours between 10am - 9pm)

Hello! I am excited that you are signed up to take AP Chemistry this coming year! I have created this summer assignment to help you start AP Chem with your best foot forward, prepared for the challenging work we have to start covering immediately when school starts – we have no time to waste!

You will be expected to **know** the information covered in your first year chemistry course (please know that College Prep Chemistry does not cover the same amount and depth as Honors Chemistry). You need to enter AP Chemistry prepared for an assessment (**TEST**) worth up to 15% of your grade given on the second day of school. It is imperative that you know immediately if you have the foundational knowledge and skills to participate fully in the course before the “add drop window” closes. While I know that sounds stressful to have an assessment on the second day of school, it would be more stressful to be in a class you don’t want to be in for the entire school year!

The chapters and topics you see in the next several pages are a review of what you should have learned in Chemistry last year and are foundational to the AP Chemistry program. These chapters may not cover everything you learned, there may be chapters/topics that were not covered by your specific teacher, but you are still expected to have these basics understood so you can fully participate at the start of AP Chem.

**The summer program is an important part of the AP course and serves two functions: 1) to keep you active as readers, you have to read the text book or success will be more difficult, and 2) to prepare you for the level of material we will be learning throughout the academic year.** **If you have gaps in your knowledge of the topics below, you need to self-study them over the summer. Be an engaged, proactive, self-sufficient learner!**

Summer Work

|  |
| --- |
| **REMEMBER** |
| * Everything from Honors Chem! AP Chem mixes all topics together, your background knowledge in the Honors Chem topics is essential because they will appear inside other chapters starting the first week in AP! * All my Honors Chem materials are on the class website! ([www.mychemistryclass.net](http://www.mychemistryclass.net) 🡪 Honors Chem) |
| **KNOW** |
| * Solubility Rules, Common Ions, VSPER * All Reference Pages are on the class website ([www.mychemistryclass.net](http://www.mychemistryclass.net/) 🡪 AP Chem 🡪 Reference Sheets) |
| **REVIEW** |
| * Stoichiometry, Kinetics, Equilibrium, Acid Base – **large part of AP CHEMISTRY!** * Chapters 1-4 in the Tro online textbook: Instructions on how to access it, must be logged in with school gmail account before clicking! <https://tinyurl.com/4yucsc26> |
| **LEARN** |
| * A little bit of Redox chemistry. We no longer have time to teach this in the Honors Chem class unfortunately. The practice work linked on the next page will have some resources to help you learn a little about this chapter. * Any topics on the next pages marked with a (\*) as these may not have been taught in recent Honors Chem years due to a variety of reasons (like covid). * Any topics on the next pages that you missed due to absences, taking Chemistry at a different school, etc. |
| **PRACTICE TURNED IN ON 1ST FRIDAY OF THE YEAR!** |
| * Summer Practice Problems – Link on next page * Print worksheet and complete on binder paper, and correct (answers are linked at the top of the worksheet) * Show work if you want credit! |
| **CHECK TURNED IN ON 1ST FRIDAY OF THE YEAR!** |
| * Complete Self-Assessment Quiz for Ch. 1-4.   + Link on next page   + Print and complete. Answers at bottom to check/correct work.   + Show work for math problems.   + Annotate non-math problem 🡪 show/explain your thought process behind your answer choice. |

REMEMBER/KNOW/REVIEW: Topics to Know Before the Start of AP Chem

This list does not cover every single topic/fact. It is just an overview to help guide your self-studying during the summer. Chapter numbers and titles correlate with Mrs. Farmer’s Honors Chemistry class order. All PowerPoints, worksheets, etc. can be found on the Honors tab of the class website. Please use them to help your review! [www.mychemistryclass.net](http://www.mychemistryclass.net) **You may not have Mrs. Farmer next year, but all AP Teachers are using her website for the summer assignment to streamline things. All students have the same summer work regardless of which teacher they end up with.** Items marked with a (\*) may not have been taught in recent Honors Chem classes due to a variety of reasons. Please self-study them!

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **BIG PICTURE TOPICS** | | | | | | |
| **1st Semester Chapters** | | | | | | |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** |
| **Basics & Atomic Structure** | **Nuclear Chemistry\*** | **Electrons** | **Periodic Table** | **Bonding & Structure** | **Reactions** | **Stoichiometry** |
| *Metric system*  *Sig figs*  *Dimensional analysis*  *Types of matter*  *Atomic structure* | *Writing equations*  *Half life calcs.\** | *E- configurations of atoms and ions*  *Noble gas configuration*  *Orbital diagrams* | *Table structure*  *Ions*  *Trends* | *Types of bonds*  *Naming/Formulas*  *Lewis struct./VSEPR*  *Polarity*  *IMFs* | *Balancing eqs*  *Types of rxns*  *Predicting products*  *Net ionic* | *Molar conversions*  *Regular stoich.* |
| **2nd Semester Chapters** | | | | | | |
| **8** | **9** | **10** | **11** | **12** | **13** | **14** |
| **Adv. Chemical Ratios** | **Gas Laws** | **Thermochem.** | **Solutions** | **Kinetics** | **Equilibrium.** | **Acid/Base\*** |
| *Limiting reagent stoichiometry*  *Percent composition*  *Empirical formulas*  *Combustion analysis\** | *Gas laws*  *Finding density and molar mass*  *Dalton’s Law\**  *Collecting gas over water vapor\**  *Gas stoichiometry\** | *Specific heat*  *Calorimetry*  *Heating curves*  *Molar heats\**  *Heat of rxns\**  *Rxn diagrams*  *Mixed phase calorimetry\** | *Solution concepts*  *Solution calculations* | *Rate effecting factors*  *Rate expressions*  *Instantaneous rates*  *Rate laws*  *Rate constant - k*  *Method of initial rates* | *Le Chatelier’s*  *K versus Q*  *ICE Tables*  *5% Rule\** | *Properties*  *Types*  *Naming*  *pH calculations*  *Strong/Weak*  *Weak ICE tables\**  *Salts, pH of salts\**  *Titrations\** |
| *\*Things that may not have been taught in your Honors Chem class depending on the year (covid), your teacher, or which school you attended.  Please self-study any topics/chapters that are gaps in your learning, not just the stared ones!* | | | | | | **15** |
| **Redox Chemistry\*** |
| *Assigning oxidation #*  *Writing half reactions*  *Balancing rxns in acidic or basic sol’ns* |

REMEMBER/KNOW/REVIEW: More Detailed Topic Lists

<https://tinyurl.com/yddlm4h6>

This list is a general guideline to help you study. It is NOT a definitive list. There are potentially things on here that will not show up on the tests, and there are potentially things not on this list that will show up on the tests. Material that appeared anywhere during the Honors Chem course all have the potential to appear on the test. Pay attention to anything that indicates it was not taught during your school year, you will need to self-study those topics as part of your summer assignment. Remember everything is on the Honors tab of the class website! [www.mychemistryclass.net](http://www.mychemistryclass.net)

LEARN: Some Resources for Redox

Here are some resources for you to use to study Redox. If the below is not sufficient information for you to learn this topic, you can use online textbooks, YouTube, the entire internet is at your fingertips! Be careful searching for work on the internet because the intro topic of Redox can sometimes be combined with a more complex topic called Electrochemistry which encompasses many more topics! You do not need to be learning the entire Electrochemistry chapter. Just a little bit about Redox Reactions since they are a type of reaction not typically taught in Honors Chem anymore.

* PDF of an Intro PowerPoint: <https://tinyurl.com/ycy4esv6>
* Packet of Practice: <https://tinyurl.com/yamnuyrf> Answer Keys: <https://tinyurl.com/nnwfcbe8>

PRACTICE: Summer Stoichiometry Problems

<https://tinyurl.com/ydgxymhr>

The skill of dimensional analysis and stoichiometry are foundational to so many topics in chemistry. It has been found that having a very strong foundation in stoichiometry can set students up for more success in AP Chemistry. Stoichiometry and dimensional analysis needs to be second nature to you before you start AP Chemistry. Print the worksheet and do the problems on binder paper. Remember to show work clearly, include units, box answers, etc! **This will be turned in!**

CHECK: Self-Assessment Quizzes for Chapters 1-4

<https://tinyurl.com/y7cx5eec>   
Print, do the problems, show work or annotated answers. Correct your work when done. Remember to show work clearly, include units, box answers, etc! **This will be turned in!**