

# AP<sup>®</sup> CHEMISTRY

## COURSE SYLLABUS

### Overview:

AP Chemistry is first year college chemistry taught in high school. This course will meet on a modified block schedule. 3 days a week we will have a 50-minute class period. Twice a week this course will meet for 80 minutes. The following will be the schedule used for AP Chemistry Students:

#### **Mon/Wed Block**

##### Period 2 Chemistry Students

1<sup>st</sup> Period: (M-F) 8:20-9:10

2<sup>nd</sup> Period: (M,W) 9:15-10:35

(T, Th, F) 9:15-10:05

Ad-Room: (T, Th) 10:10-10:35

3<sup>rd</sup> Period: Back on Schedule

#### **Tues/Thur Block**

##### Period 3 Chemistry Students

1<sup>st</sup> Period: (M-F) 8:20-9:10

2<sup>nd</sup> Period: (M-F) 9:15-10:05

Ad-Room: (M, W) 10:10-10:35

3<sup>rd</sup> Period: (M, W) 10:40-11:30

(T, Th) 10:10-11:30

4<sup>th</sup> Period: Back on Schedule

\*Friday follow normal schedule

Lab activities are an integral part of this course. You will work in collaborative groups of two to three students on each activity. Students are responsible for turning in his or her individual lab report in their lab notebook. A minimum of 25% of student contact time will be spent doing hands-on laboratory activities. (CR5a)

### Textbook and Lab Books (CR1):

Chemistry: The Central Science; Brown and LeMay, and Chang 12<sup>th</sup> Edition. 2012

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

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

Advanced Chemistry with Vernier. Randall, Jack. Oregon: Vernier Software and Technology, 2004.

### Student Solutions Manual and Student Guide:

Wilson, R: Solutions To Exercises Chemistry the Central Science, 12<sup>th</sup> Edition, Prentice Hall, 2012.

Hill, James: Student Guide Chemistry the Central Science, 12<sup>th</sup> Edition, Prentice Hall, 2012.

**Course Design:**

The Advanced Placement Program in Chemistry consists of first year college level chemistry as prescribed by the College Board. The course is centered around the the six big ideas and 7 science practices articulated in the AP Chemistry Curriculum framework provided by the College Board. (CR2)

- **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
- **Science Practice 1:** The Student can use representations and models to communicate scientific phenomena and solve scientific problems
- **Science Practice 2:** The student can use mathematics appropriately
- **Science Practice 3:** The student can engage in scientific questioning to extend thinking or to guide investigations within the context of the AP course
- **Science Practice 4:** The student can plan and implement data collection strategies in relation to a particular scientific question
- **Science Practice 5:** the student can perform data analysis and evaluation of evidence
- **Science Practice 6:** The student can work with scientific explanations and theories
- **Science Practice 7:** The student is able to connect and relate knowledge across various scales, concepts, and representations in and across domains

Technology will be incorporated into the course through the use of the mobile computer lab, Student Issued Chrome Books, CBL's, TI Interactive, Smart Board<sup>®</sup> applications, Vernier probe ware, and as well as other various applications of technology. As we develop, illustrate, and extend this conceptual core, we will see the interplay of nature and human creativity in a variety of chemical processes and materials.

A special emphasis will be placed on the seven science practices, which capture important aspects of the work that scientists engage in, with learning objectives that combine content with inquiry and reasoning skills. Thus, there are three goals for this course:

1. This class will cover chemistry in a manner equivalent to a freshman college course
2. Laboratory experiments will be done in a manner equivalent to a freshman college laboratory course and various inquiry based applications will be incorporated into many experiments.
3. This course will prepare students for success on the AP Chemistry exam given in May.

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Included in this course will be various instructional methods such as direct instruction, group problem solving sets, lab experiments, computer simulations, individual work, demonstrations, and other hands on activities. In addition various activities will be done throughout the years that will incorporate the six big ideas. (Cr3a-f) (See detailed schedule attached) Reading assignments and homework problems from the textbook will be assigned. All homework assignments can be checked using the Solution to the Exercises guide given to each student.

Over the last 7 weeks before the test, we will begin to do practice problems from previous years released Advanced Placement Tests. You will be given multiple practice tests over this time. We will review the 6 big ideas individually, and in groups over this time.

After the test in May, students will spend the time in lab investigating a topic in chemistry of interest to them. They will connect their knowledge of chemistry and science to major societal or technological components to help them become scientifically literate citizens. **(CR4) (See attached schedule)**

### **Lab Activities:**

#### Overview

The lab should be an enjoyable experience as well as an occasion for learning. All Labs are hands on activities done in the Laboratory. All lab activities will be done in lab groups of two to three students. The intent of the modified block schedule is to provide ample time engaged in these lab activities. A minimum of 25% of the in class time will be dedicated to hands on lab activities. These activities are intended to illustrate, clarify, and extend class discussions. It also provides an opportunity for discovery by careful observation, use of experimental techniques, and careful interpretation. Whenever possible a component of inquiry will be included in the lab activities. It is expected that you come to the Laboratory prepared. Therefore to receive full credit, before entering the lab area, a page in your lab notebook should contain your heading, and the data table should be formatted. Most labs include a Pre Lab experiment. This will need to be completed before the day of the lab. Many labs will be corrected together in class. A class discussion will help to engage in scientific questioning that will extend thinking of proper scientific processes. **(CR2)**

#### Notebook

You will be supplied with a duplicate lab notebook. You will be required to complete all labs listed below and keep them in this notebook. The yellow duplicate sheet will be turned in and you will keep the original copy in the lab notebook. Any lab turned in late will be deducted 10% per day. At the end of this course, you will want to keep this notebook. In order to receive college credit, many professors will want to see this book.

#### Safety

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Lab Safety is extremely important in AP Chemistry. Safety glasses must be worn in the lab at all times! The use of contacts can be dangerous and should not be worn in the lab. Regard every chemical as poisonous and flammable unless you definitely know otherwise, and exercise corresponding caution. Become acquainted with the safety equipment in the laboratory. Report any accident immediately to your instructor. Do not leave coats, books, and supplies in the lab area but rather leave them on the tables. **DO NOT BRING ANY FOOD OR DRINK INTO THE LAB.** At the end of each lab period, clean your equipment and the lab desktop. Dispose of used paper towels into the trash. Dispose of any used or unused chemicals as directed by your instructor.

### Lab Format (CR7)

Nearly every lab we do will have a similar format. (I will let you know when we vary from that format.) Most labs will have the following sections: Problem/Purpose, Data/Observations, Summing Up/Calculations, and Conclusion. Not all labs will contain each section. Standard labs will be worth 100 points. You will need a carbonless copy lab notebook. Most lab reports will be due one week after the data has been collected. *Although we usually collect data as part of a group, you are responsible for your own, unique lab report. Collaboration is OK, identical responses ARE NOT!* Zeros will be given to students who turn in labs that have been partially or completely copied.

**Pre Lab: (10 pts)** Most labs will require reading of the lab procedure and completing the preliminary questions and calculations. This needs to be completed before the beginning of the lab activity.

**Heading/Purpose: (10pts)** The problem is normally given to you at the beginning of the lab. It tells us the purpose of the lab, the problem we are trying to solve and/or questions we are trying to answer. You will need to refer back to the problem when writing the conclusion. *The lab title needs to be centered on top of the page, the problem written beneath the title, you and your partners name along with the period and date in the upper right corner.*

**Data/Observations: (20 pts)** Record information collected during experiment. To receive full credit: Observations are detailed and complete, data is organized, labeled, shows units, with the proper number of significant figures, *and is in a table*, measurements are accurate and precise to the correct number of significant figures, work for calculated data is shown.

**Calculations/Graphs: (10-20pts)** All graphs must be titled, have axis appropriately labeled with units, and have data plotted correctly.

**Summing Up: (20-30 pts)** This section contains specific questions that need to be answered. To receive full credit questions are answered correctly and in complete sentences. Data is used where necessary to support answers. (Calculations may also be a part of the summing up section.)

**Calculations:** To receive full credit, any formulas must be shown, all work is shown completely, answers are consistent with data collected, every number is labeled with correct units, and answers have units and the correct number of significant figures.

**Conclusion: (20 pts) Contains Two Parts: Claim and Evidence/ Reasoning**

**Claim/Hypothesis:** A sentence that answers the question or problem posed in the lab as well as stating the results of your lab.

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**Evidence/Reasoning:** In this section, you should write a paragraph that explains how your data supports your claim. Specific examples from data should be used. Do not re-write the procedure. I want to know your results and what you learned, not what you did to collect data. You should also include an error analysis as part of this lab when numerical data is collected.

**Organization/Neatness:** Your lab area must be clean and equipment put away after a lab is complete. All sections of lab reports are organized and neatly written. Information contained in report is easy to find. Mistakes are erased or “whited out”.

**Missed Labs** (Renews at each quarter.)

- All missed labs need to be made up in a timely manner outside of class time. You will be given a week to complete the write up.
- Any late lab will be assessed a 10% penalty for each day it is late.

### Lab Schedule (CR5b & CR6)

| CHAPTER   | EXPERIMENT  |
|-----------|---|
| 1         | Liquid Chromatography Lab – Separation of Mixtures **   |
| 3         | Lab: Finding the Ratio of Moles of Reactants in a Reaction **   |
| 3         | Empirical Formula of Silver Oxide **  |
| 4         | Determination of Activity Series **   |
| 5         | Thermodynamics – Hess’s Law   |
| 7         | Lab: Gravimetric Analysis   |
| 10        | Determination of Molar Volume **  |
| 10        | Molecular Mass of a Volatile Liquid –CBL’s **   |
| 12        | Analysis of Silver in an Alloy  |
| 13        | Determination of Molar Mass Using Freezing Point Depression –CBL’s **   |
| 14        | Rate and Order of a Chemical Reaction – CBL’s **  |
| 15        | The Determination of the Equilibrium Constant of FeSCN – CBL’s **   |
| 15        | LeChatlier’s Principle Lab  |
| 16        | Determination of Ka for Weak Acids  |
| 17        | Acid/Base Titration – CBL’s **  |
| 17        | Preparation of Buffered Solutions   |
| 17        | Separation and Qualitative Analysis of metal Cations **   |
| 19        | Molar Heat of a Reaction  |
| 20        | Electrochemistry Voltaic Cells –CBL’s   |
| 20        | Oxidation and Reduction Titrations **   |
| Review    | Analysis of Alum **   |
| Review    | Synthesis, Isolation and Purification of an ester   |
| Post Test | Various Laboratory Experiments depending on student interest. –<br>These will vary year-to-year depending on time and class interests. –<br>Students will relate their individual lab to show how it is related to<br>everyday world applications, major societal or technological<br>components such as how spectroscopy can be used to distinguish real<br>art from fake art. (CR4) |
|           |   |

**\*\* Lab activities with Guided Inquiry – Modified using Flinn scientific suggestions for incorporating inquiry into these labs**

**Schedule: (CR2, CR3)**

The detailed schedule will provide an overview of the topics covered in this course. (See end of document) Every unit a detailed assignment sheet will be given to the student. This will include assignments and the dates of each lab, quiz, and test. The days listed on the attachment are only a guide. Often Lab experiments will take multiple days to complete. Below is a general guide of the chapters covered in this course.

- Chapter 1 Matter and Measurements (BI 1 & 2)
- Chapter 2 Atoms Molecules and Ions (BI 1 & 2)
- Chapter 3 Stoichiometry (BI3)
- Chapter 4 Reactions in Aqueous Solutions (BI3)
- Chapter 5 Thermochemistry (BI5)
- Chapter 6 Electronic Structure of Atoms (BI 1 & 2)
- Chapter 7 Periodic Properties of the Elements (BI 1 & 2)
- Chapter 8 Basic Concepts of Chemical Bonding (BI 1 & 2)
- Chapter 9 Molecular Geometry and Bonding Theories (BI 1 & 2)
- Chapter 10 Gases (BI 1 & 2)
- Chapter 11 Liquids and Intermolecular Forces (BI 1 & 2)
- Chapter 12 Solids and Modern Materials (BI 1 & 2)
- Chapter 13 Properties of Solutions (BI 2)
- Chapter 14 Chemical Kinetics (BI 4)
- Chapter 15 Chemical Equilibrium (BI 6)
- Chapter 16 Acid – Base Equilibria (BI 6)
- Chapter 17 Additional Aspects of Aqueous Equilibrium (BI 6)
- Chapter 19 Chemical Thermodynamics (BI 5)
- Chapter 20 Electrochemistry (BI 3)

**Time Expectations:**

You are expected to spend an average of five hours a week in individual/group study time outside of class. The first few chapters will consist of some review. Don't be fooled into thinking that you will not need to prepare. Many have found that when they let up on studying, they fall behind, and it is difficult to catch up.

**Attendance and Class Discussions:**

One of the skill areas that students need to develop for college success is the skill of note taking. The student should bring a three ring binder so other papers such as assignments and handouts may be added to the notebook as well as lecture notes. Students absent from class are responsible for doing their assignments from the biweekly assignment sheet. Examinations, quizzes, and lab reports are expected to be taken when scheduled unless you have an excused absence. You will know of a scheduled text or quiz so expect to take it if you were gone the previous day(s). If possible, the student should attempt to inform the instructor of an excused absence ahead of time. At the end of each semester the student will take a semester test. As per district policy, the test will count 15% towards your final grade.

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### **Problem Solving:**

Problems are extremely important if you are to master chemistry. Doing these problems in a step-by-step manner, will help to make you successful in chemistry. On all tests, quizzes, and labs; formulas, units, and showing work are expected. You are required to work all assigned exercises each chapter. You are encouraged to keep up with this daily. Each chapter the assigned exercises will be turned in the day before the test. For review, it is highly encouraged to complete sample test from your student guide. This will help to prepare you for the chapter and semester tests. Each student is supplied with a solutions manual, which provides step-by-step directions on how to complete all problems. You should use this manual to help answer any questions you may have as you work problems. If you are unable to understand a problem you are encouraged to come in before or after school for individual help.

### **Grading:**

This course uses a weighted grade system as follows:

- Tests:** 65% of the quarter grade
- Labs:** 15% of the quarter grade
- Quizzes:** 10% of the quarter grade
- Homework:** 10% of the quarter grade

85% of your semester grade will be determined by the average of the two quarters. A semester test will count for the remaining 15%.

All make up work is to be completed within a week of an excused absence.

### **Test Retakes:**

In order to ensure understanding, retakes or test corrections are provided with most chapter tests. Students are encouraged to complete the additional work to earn a portion of their missed test points back.

### **AP Test:**

At the end of the second semester, each student is expected to take the AP Exam. A score of a 3, 4 or 5 along with a completed lab notebook may result in college credit. We will review for approximately four weeks before the AP test in May. At the beginning and end of this review period, a practice exam will be given on a Saturday. You are highly encouraged to attend. You will also be provided with access to the APEX learning Web Site. This is an individualized study plan, which will help you to work on your weaknesses in this course. During these four weeks we will spend a significant amount of our time reviewing past released AP Exams. What we do in class should only be a part of your preparation for the AP Exam. You should also spend an appropriate amount of time outside of class as well.

### **Detailed Class Schedule:**

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**AP CHEMISTRY CHAPTER 1&2 SCHEDULE**

| Day | Activity/Discussion                       | Assign                          | Curriculum Framework Articulation |
|-----|---|---------------------------------|-----------------------------------|
| 1   | Intro, Syllabus, Books, Seating Chart     | Read pg 4-14                    | 1.D.1:a                           |
|     | Poly Ions - Pg 62/63                      | Ex. (end of chapter)            |                                   |
|     | Diatomic Molecules                        | # 1,2,15,19,20,21               |                                   |
| 2   | Matter                                    | Read pg.15-39                   | 1.A.1:b L.O. 5.10, 3.10           |
|     | Elements/Compounds/Mixtures               | Ex 5, 8, 23, 27, 30             | 1.A, 1:b, LO1.2                   |
|     | Physical/Chemical Properties              | Pre Lab - Chromotography        | 3.C.1:b, 3.C.1:c, 5.D:2           |
|     | Separation of Mixtures                    | Due Tomorrow                    |                                   |
| 3   | Lab: Liquid Chromotography                | Lab Report Due on Day 9         | L.O2.7, 2.10, 2.13                |
|     | - Vonderbrink (Pg 109)                    |                                 | SP 1.4, 4.3, 5.1, 6.2             |
|     | Separation of Mixures                     |                                 | 2.A.3:e, 2.A.3:f                  |
| 4   | Measurements                              | Ex (Chapter 1) 35, 39, 40, 46   |                                   |
|     | SI Base Units, Derived Units              | 75                              |                                   |
|     | Dimensional Analysis                      | Study Poly Ions Pg 62/63        |                                   |
|     | Precision/Accuracy, Significant Figs.     |                                 |                                   |
| 5   | Quiz - Measurements/Poly Ions             | Read pg. 40-47                  |                                   |
|     | History of Atom                           | Ex (Chap 2) 1, 9, 11, 15, 16    | 1.D.1:b LO 1.13                   |
|     | Atomic Structure                          |                                 | 1.A.1:c, 1.A.1.d                  |
| 6   | Atomic Structure/Atomic Weights           | Read Pg 47-52                   |                                   |
|     | Activity Mass Spectrometer - online (CRa) | Ex (Chap. 2) #'s 2, 4, 7, 17,   | 1.14 SP 1.4, 1.5                  |
|     | Periodic Table - Groups/Periods           | 20, 22, 25, 31, 35              |                                   |
|     | Regions, Charges                          |                                 |                                   |
| 7   | Inorganic Nomenclature                    | Read 53-54                      | 1.E.2:b,                          |
|     | Ionic Compounds, Molecular Compounds      | Ex 5, 6, 8, 46, 48, 52, 59, 61  | 1.E.2:b                           |
|     | Acids Naming                              | 66, 68, 70                      |                                   |
| 8   | Organic Nomenclature                      | Read Pg 55-67                   |                                   |
|     | Functional Group Naming                   | Ex.#'s 72, 74, 77, 78, 80       |                                   |
|     | Inorganic Review                          |                                 |                                   |
| 9   | Quiz - Nomenclature                       | Optional Ex #'s (Chap 1) 59,    |                                   |
|     | Chapter 1&2 Review                        | 63, 73, 79                      |                                   |
|     |   | (Chap 2) 81, 86, 88, 92, 97, 99 |                                   |



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|    |                  |                              |  |
|----|------------------|------------------------------|--|
| 10 | Test Chapter 1&2 | Read 77-81                   |  |
|    |                  | Ex (Chap 3) #'s 1, 2, 12, 13 |  |

## AP CHEMISTRY CHAPTER 3&4 SCHEDULE

| Day | Activity/Discussion  | Assign                           | Curriculum Framework Articulation    |
|-----|--|----------------------------------|--------------------------------------|
| 11  | Chemical Equations (Patterns)  | Read pg. 81-86                   | 3.A.1.A, 1.E.1:a, 1.E.1:c, 3.C.1:a   |
|     | Conservation of Mass   | Ex. (end of chapter)             | 1.A3:a, 1.E.2:c, 1.E.2:d             |
|     | Formula and Molecular Weights  | 3, 4, 5, 15, 17, 20, 23a         | 1.A.1:a                              |
|     | Reaction Types Pre Lab Mole Ratio Activity (CR3c)  | Pre Lab Mole Ratio Lab           | LO 1.4, 3.4, 3.10                    |
| 12  | Lab: Finding the Ratio of Moles of Reactants<br>In a chemical reaction (Vonderbrink pg 45) | Lab Report Due on Day 17         | SP 1.4, 2.2, 4.2, 5.1, 6.2, 6.1, 6.4 |
| 13  | Empirical/Molecular Formulas   | Read 86-96                       | L.O 1.12, 1:A, 2:b, 1.A.2:a, 1.A.1:d |
|     | Combustion Analysis  | Ex. 28, 33, 38, 40, 45b, 48, 51b |                                      |
|     | Avagadro's # and the Mole  | 53                               | 1.A.3:b, 1.A.3:c, 1.A.3:d, 1.E.2:b   |
| 14  | Quiz: Formulas/Combustion Analysis   | Read 96-103                      |                                      |
|     | Stoichiometry  | Ex. 7, 8, 54, 62, 65, 70, 76, 82 | 1.A.3:a, 1.E.1:b                     |
|     | Limiting/Excess Reactants Pre Lab (CR3c)   | Pre Lab Empirical Formula Lab    | LO 1.1, 1.2, 1.3, 1.18, 1.19,        |
|     | Actual/Theoretical Yield, % Yield, % Error   |                                  | 3.A.2:a LO 3.3, 3.4, 3.5, 3.6        |
| 15  | Lab: Empirical Formula of Silver Oxide<br>(Vonerbrink Pg 1)                                | Lab Report Due Day 20            | SP 1.4, 2.1, 2.2, 4.2, 5.1, 6.1, 6.4 |
| 16  | Review of Combustion Analysis  | Optional Excersises:             |                                      |
|     | Stoichiometry  | 90, 94, 98, 103, 109             |                                      |
|     | Lab Write Ups  |                                  |                                      |
| 17  | Electrolyte Properties   | Read Pg. 116-130                 | 1.D.3:c, 2.A.3:h, 2.A.3:l, 2.A.3:j   |
|     | Solubility Rules - NCAA IA   | Ex. 4.1, 2, 3, 11, 15, 21, 24c,  | 3.C.1:d                              |
|     | Precipitation and Net Ionic Equations  | 35, 36, 43                       | 3.B.1:a, 6.c.3:d, 3.A.1, 3.B.3:e     |
| 18  | Strong Acid/Base Reactions   | Read 131-138                     | 1.E.2:f, 3.A.2:c                     |
|     | Oxidation Reduction  | Ex. 4.7, 8, 9, 47, 48, 51, 55,   | 2.B.3:d, 3.B.3:a, 3.B.3:b, 3.B.3:c,  |
|     | Activity Series  |                                  | 1.E.2:f                              |
|     | Net Ionic Review   |                                  | LO 3.2                               |
| 19  | Quiz: Net Ionic/Oxidation/Reduction  | Ex. 60, 62, 67, 71, 73, 76       |                                      |

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|  | Review of Solution Chemistry  |   |  |
|--|---|---|--|
| 20   | Lab: An Activity Series<br>(Vonerbrink Pg 73)   | Lab Report Due Day 24   | LO 1.9, 1.10, 3.8, 3.12<br>SP 2.2, 2.3, 6.1, 6.4                           |
| 21   | Concentration of Solutions<br>Dilutions<br>Solution Stoichiometry   | Read Pg. 139-148<br>4.10, 4.81, 83, 87, 89  | 1.D.3:c, 2.A:3.b, 2.A.3:f, 2.A.3:j   |
| 22   | Titration<br>Online Activity: Titrations standardization (CR3f)   | None: Finish Any missing assignments  | 3.A.2:c<br>LO 2.9, SP 1.1, 1.4   |
| 23   | Quiz: Concentrations/Solution Stoich.<br>Review Chapter 3&4   | Optional Exercises:<br>3.88, 93, 101, 111 (difficult)<br>4.97, 103, 108, 111,<br>Look at Student Guide Practice Tests |  |
| 24   | <b>TEST: CHAPTER 3&amp;4</b>  | Read Pg. 159-164<br>Ex. 5.1, 3, 15, 19, 20  |  |
| <b>AP CHEMISTRY CHAPTER 5&amp;6 SCHEDULE</b> |   |   |  |
| Day  | Activity/Discussion   | Assign  | Curriculum Framework Articulation  |
| 25   | Go Over Test<br>Thermodynamic Terms<br>First Law of Thermochemistry                                       | Read 159-169<br>Ex 5.3, 4, 6, 16, 25, 27, 30, 31  | 3.c.2.a-d, 5.B.3:e, 5.B.3:f<br>5.C.2:a, 5.C.2:b, 5.C.2:c<br>5.B.1, 5.E.2:a |
| 26   | Discuss Enthalpy<br>Enthalpy of a reaction  | Read Pg 169- 175<br>5.8, 34, 37, 39, 41, 42, 43, 46,<br>47  | LO 5.3, 5.4, 5.5   |
| 27   | Calorimetry<br>Constant Pressure Calorimetry<br>Bomb Calorimetry<br>Specific Heat                         | Read Pg 175-180<br>5.50, 51, 55, 56, 57   | 5.A.2, 5.B.2, 5.B.3:a<br>5.B.3:b, 5.B.4                                    |
| 28   | Enthalpy of Formation<br>Calculating Enthalpy of Reactions<br>Hess's Law<br>Thermodynamics Pre Lab (CR3e) | Read Pg 181-187<br>5.63, 64, 68, 69, 74b, 75, 80  | 5.C.2:g<br>5.b.3Aa LO 3.11<br>LO 5.7, 5.8, 5.6, 5.7, 3.11                  |
| 29   | Lab: Thermodynamics - Hess's Law<br>Vonderbrink Experiment # 6  | Lab Report Due Day 34   | SP 2.2, 2.3, 4.3, 5.1, 6.1   |

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| 30   | Thermodynamics Quiz                                      | Optional Ex. 5.95, 100, 102, 115     |                                    |
|--|--|--------------------------------------|------------------------------------|
|  | Review Discussion /Review Sheet                          | Look at Student Guide Practice Tests |                                    |
|  | Homework Due   | Read Section Foods and Fuels         |                                    |
| 31   | Test: Chapter 5 Thermodynamics                           | Read Pg 208-212                      |                                    |
|  |  | Ex. 6.2, 6.3, 6.4, 6.11, 6.12        |                                    |
| 32   | Go Over Test   | Read Pg 213-216                      |                                    |
|  | Discuss Dual Nature of Light                             | Ex. 6.18, 23, 25, 32, 36, 40, 43     | 1.C.2:e, 1.D.3:a, 5.E.4:b          |
|  | Bohr Model and Line Spectra                              |                                      | 1.B.1:d, 1.B.1:e, 1.D.3:b          |
|  | Introduce PES  |                                      | 1.D.2:a, 1.D.2:b, 1.D.2:c, 1.D.3:b |
| 33   | PES - Guided Inquiry Activity (CR3a)                     | Activity Due Day 36 - Lab Score      | LO 1.12                            |
|  | Moog and Farrell's <i>Chemistry: A Guided Inquiry 5e</i> |                                      |                                    |
| 34   | Quantum Mechanics and Atomic Orbitals                    | Read Pg 216-229                      | 1.C.2:b, 1.C.2:c                   |
|  | The Wave Behavior of Matter                              | Ex. 49, 52, 57a&b,                   |                                    |
| 35   | Electron Configurations                                  | Read 229-238                         | 1.B.2:a                            |
|  | Electron Configuration and the Periodic Table            | Ex. 62, 63, 67, 69, 74               |                                    |
| 36   | Quiz: Electron Configurations                            | Study the Student Guide              |                                    |
|  | Homework Due   | Practice Tests                       |                                    |
|  | Review Chapter 6 /Review Sheet                           |                                      |                                    |
| 37   | TEST CHAPTER 6   | Read Pg 250-254                      |                                    |
|  |  | 7.1, 11, 12, 15                      |                                    |
| <b>AP CHEMISTRY CHAPTER 7&amp;8 SCHEDULE</b> |  |                                      |                                    |
| Day  | Activity/Discussion                                      | Assign                               | Curriculum Framework Articulation  |
| 38   | Go Over Test   | Read Pg. 251-259                     |                                    |
|  | Atomic and Ionic Radii                                   | Ex. 7.2, 3, 11, 13, 15, 23, 24, 28   | 1.B.1:b, 1.B.1:c, 1.B.2:b          |
|  | Nuclear Charge (Z) Effective Nuclear Charge              | 29, 31, 37                           | 1.V.2:d, 1.C.1:c                   |
| 39   | Ionization Energy  | Read Pg 259-264                      | 1.C.1:b                            |
|  | Successive Ionization Energies                           | Ex. 7.39, 42, 46, 47, 51, 53, 56     | 2.C.1:a, 2.C.1:b                   |
|  | Electron Affinity & Electronegativity                    |                                      |                                    |
| 40   | Quiz: Periodic Trends                                    | Read Pg. 264-267                     |                                    |
|  | Metals, Nonmetals, Metalloids                            | Ex. 7.57, 61, 63, 64, 67, 69, 73,    | 1.C.1:a, 1.C.1:b, 1.C.1:d          |

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|  |  |   | 77   |                                    |
|--|--|---|--|------------------------------------|
|  |  | Reactions of Metals and Nonmetals               | 80, 82   |                                    |
|  |  | Group 1A, 2A, 7A and 8A Trends                  |  |                                    |
| 41                                     |  | <b>Quiz - Reactions of Metals and Nonmetals</b> | Read Pg 290-296  |                                    |
|  |  | Ionic Bonding                                   | Ex 8.2, 3, 12, 19, 22, 24, 28                                  | 1.B.1:a, 1.C.2:a, 2.C.1:d          |
|  |  | Born Haber Cycle                                |  | 2.C.2:a, 2.C.2:b, 2.D.1:b, LO 6.24 |
|  |  | <b>PreLab: Gravimetric Analysis (CR3a)</b>      | PreLab: Due Tomorrow   | 1.E.2:e LO 1.2, 1.3, 1.19, 3.3     |
|  |  | Ionic Nomenclature                              |  |                                    |
| 42                                     |  | <b>Lab: Gravimetric Analysis</b>                | Lab Report Due Day 47  | SP 2.2, 4.3, 5.1, 6.1              |
| 43                                     |  | Covalent Bonding                                | Read 296-304   |                                    |
|  |  | Lewis Structures                                | Ex 8.31, 34, 35, 37, 38, 41, 44, 46                            | 1.V.2:c, LO 2.21, 2.C.4.a          |
|  |  | Bond Polarity                                   |  | 2.C.1:c, 2.C.1:e, 2.C.1:f          |
|  |  | Properties of Molecules                         |  |                                    |
| 44                                     |  | Lewis Structures                                | Read 305-309   |                                    |
|  |  | Resonance Structures                            | Ex 8.48, 51, 55, 57  | 2.C.4:c, 2.C.4:d, 2.D.4:e          |
| 45                                     |  | Review Lewis Structures                         | Read pg. 309-314   |                                    |
|  |  | Resonance Structures                            | Ex 8.59, 62, 63, 64  |                                    |
|  |  | Benzene Lewis Structure                         |  | 2.C.4.e                            |
|  |  | Lewis Structure Exceptions                      |  |                                    |
| 46                                     |  | <b>Quiz: Lewis Structures</b>                   | Read Pg. 315-321   |                                    |
|  |  | Strength of Covalent Bonding                    | Ex. 8.69, 8.71   | LO 5.1, 2.17, 2.18                 |
|  |  | Bond Enthalpies                                 |  | 2.C.1:d, 5.C.1                     |
| 47                                     |  | <b>Quiz: Bond Enthalpies</b>                    | Optional Ex. 7.85, 92, 99<br>8.80, 8.86, 8.89 & Practice Tests |                                    |
|  |  | Review of Chapter 7 & 8                         |  |                                    |
| 48                                     |  | <b>TEST CHAPTER 7&amp;8</b>                     | Read 331-337   |                                    |
|  |  |   | Ex. 9.1 -9.5   |                                    |
| <b>AP CHEMISTRY CHAPTER 9 SCHEDULE</b> |  |   |  |                                    |
| Day                                    |  | Activity/Discussion                             | Assign   | Curriculum Framework Articulation  |
| 49                                     |  | Go Over Test                                    | Read Pg. 337-343   |                                    |
|  |  | VSEPR THEORY                                    | Ex. 9.11, 12, 14, 17, 20, 26, 27,                              | 2.C.4:b, 2.C.4:e, 2.C.4:f          |

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|  | Molecular Shapes and Angles                          | 29  |                                      |
|--|--|---|--------------------------------------|
| 50   | Shapes of Expanded Octets                            | Read Pg 343-345                                     |                                      |
|  | Molecular Polarity                                   | Ex 9.30, 31, 32, 36, 37, 39, 40                     | 2.C.1:f                              |
|  | Effects of Non bonding electrons on shape            | 43, 46  |                                      |
| 51   | Orbital Overlap                                      | Read Pg. 345-358                                    |                                      |
|  | Sigma and Pi Bonding                                 | Ex 9.7, 8, 51, 55, 57, 61, 64, 70                   |                                      |
|  | Hybridization  |   | 2.C.4:g                              |
| 52   | Activity - Shape and Polarity of Molecules<br>(CR3b) | Activity Due Day 54<br>Quiz on Shapes/Polarity Tom. | LO 5.1, 2.17, 2.18<br>SP 6.1, 6.,4   |
| 53   | Quiz: Molecular Shapes and Polarities<br>MO Theory   | Read Pg 358-373<br>Ex. 9.9, 9.10, 9.71, 9.72        | 2.C.4:h, 2.C.4:i                     |
| 54   | Review of Chapter 9 Shapes/Hybrid/MO                 | Student Guide<br>Practice Tests                     |                                      |
| 55   | <b>TEST CHAPTER 9</b>                                | Read 383-387<br>Ex 10.1, 2, 3, 13, 14               |                                      |
| <b>AP CHEMISTRY CHAPTER 10&amp;11 SCHEDULE</b> |  |   |                                      |
| Day  | Activity/Discussion                                  | Assign  | Curriculum Framework Articulation    |
| 56   | Go Over Test   | Read pg. 384-391                                    |                                      |
|  | General Properties of Gases                          | Ex. 10.4, 17, 21, 27-30                             | 2.A.2:d, 5.A.1                       |
|  | Gas Laws and Kinetic Molecular Theory                |   | LO 2.6, SP 1.6                       |
| 57   | Ideal Gas Law  | Read Pg. 391-399                                    | 2.A.2:a, 2.A.2:c                     |
|  | Ideal Gas Law Applications                           | Ex. 10.5, 6, 32, 35, 38, 42, 51,                    |                                      |
|  | Gas Stoichiometry                                    | 53, 56, 58  | 3.A.2:b                              |
| 58   | Quiz - Gas Laws and Ideal Gas Law                    | Read Pg. 399-402                                    |                                      |
|  | Gas Mixtures and Partial Pressures                   | Ex. 10.7,8, 59, 62, 63, 65, 69, 73,                 | 2.A.2:b                              |
|  | Collecting a Gas over Water                          | 74, 76  |                                      |
|  | FRQ Gasses and Pre Lab MM of Volatile Liquid (CR3b)  |   | LO 2.4, 2.5, 2.6, 2.11, 2.12, 3.10   |
| 59   | Lab: Molar Mass of Volatile Liquid                   | Lab: Report Due on day 64                           | SP 1.3, 1.4, 2.2, 2.3, 5.1, 6.1, 6,2 |
|  | Pre Lab: Molar Volume of a Gas (CR3b)                |   | SP 6.4, 6.5; LO 2.4, 2.5, 2.6, 2.12  |
| 60   | Lab: Molar Volume of a Gas                           | Lab: Report Due on day 65                           | LO 2.17, 3.3, 3.4, 3.10 SP 1.3, 1.4  |
|  |  |   | 2.2, 2.3, 5.1, 6.1, 6.4, 7.5, 7.2    |

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| 61   | Work Day on Lab Reports/Data Collection       | Lab Report/FRQ Gas Laws                       |                                     |
|--|---|---|-------------------------------------|
| 62   | Kinetic Molecular Theory                      | Read 402-413                                  | 2.A.2:d, 5.A.1                      |
|  | Effusion/Diffusion of gases                   | Ex. 10.9-12, 83, 84, 86, 89, 92,              | LO 2.6, SP 1.6 2.B.2:d              |
|  | Ideal Gas Derivation/Vanderwalls equation     | 95, 98  | 2.A.2:e, 2.A.2:f, 2.A.2:g, 2.B.2:c, |
| 63   | <b>GAS LAW QUIZ - 25 Pts. Group Assesment</b> | Catch Up Day on Excersises<br>and Lab Reports |                                     |
| 64   | Liquids and Solids - Molecular View           | Read Pg. 425-436                              | 5.D:1, 2.A.1:b, 2.B.1:a, 2.B.1:b    |
|  | Intermolecular Forces                         | Ex. 11.1, 2, 10, 11, 12, 15, 17,<br>21,       | 2.B.1:c, 2.B.2:a, 2.B.2:b           |
|  | Intramolecular Forces                         | 24, 28, 29                                    | 2.B.2:c, 2.B.2:d, 2.B.3:a           |
| 65   | Properties of Liquids                         | Read Pg 437-442                               |                                     |
|  | Viscosity, Surface Tension, Phase Changes     | 11.3, 4, 33, 35, 37, 40, 43, 46               | 2.A.1:e, 5.B.3:c, 5.B.3:d           |
|  | Heating/Cooling Curve                         |   |                                     |
| 66   | Vapor Pressure                                | Read Pg 442-448                               |                                     |
|  | Boiling Points/Critical Points                | 11.5, 6, 7, 51, 52, 55, 58, 61,               | 2.A.1:e, 5.B.3:c, 5.B.3:d           |
|  | Phase Diagrams                                |   |                                     |
| 67   | <b>Quiz: Intermolecular Forces</b>            | Practice Tests: Student Guide                 |                                     |
|  | Review Chapter 10 and 11                      | STUDY!!!!!!!!!!!!                             |                                     |
| 68   | <b>Test: Chapter 10 and 11</b>                | Read Pg 473-481                               |                                     |
|  |   | Ex. 12.28, 35, 43, 48, 49                     |                                     |
| <b>AP CHEMISTRY CHAPTER 12, 13, &amp; SEMESTER I TEST SCHEDULE</b> |   |   |                                     |
| Day  | Activity/Discussion                           | Assign  | Curriculum Framework Articulation   |
| 69   | Go Over Test                                  | Ex: 12.7, 8, 9, 11, 14, 38, 64                |                                     |
|  | Discuss Solid Structure                       |   | 2.A.1:a, 2.A.1:d                    |
|  | <b>Alloy Activity - Online (CR3b)</b>         | Pre Lab: Analysis of Silver in an Alloy       | 2.C.3, 2.D.2, 2.D.3, 2.D.4          |
| 70   | <b>Lab: Analysis of Silver in an Alloy</b>    | Lab Report Due Day 75                         | LO 2.20, 2.26, 2.27, 2.28, 2.25     |
|  | Vonderbrink Lab #2                            |   |                                     |
| 71   | Discuss Solubility                            | Read: Pg 514-530                              | 2.B.3:b, 2.B.3:e, 2.V.3:b           |
|  | Discuss Saturation/Saturation Curves          | Ex. 13.1, 2, 3, 5, 7, 9, 13, 18, 20,<br>25    | 2.B.3:e                             |
|  | Ways of expressing concentrations             | 33, 36, 44, 48d                               | 2.A.1:c, 2.A.3:b, 2.A.3:c           |
|  | Energy Processes in Solution Formation        |   | 2.B.3:b                             |

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|    |  |                              |                                       |
|----|--|------------------------------|---------------------------------------|
| 72 | Concentration Quiz                           | Read Pg. 530-541             |                                       |
|    | Pre Lab: Molar Mass by FPD (CR3e)            | Ex. 62, 69, 71               | LO 1.4, 2.8, 2.9, 5.1, 5.2, 5.6, 5.10 |
|    | Colligative Properties                       | Pre Lab: Molar Mass by FPD   |                                       |
| 73 | Lab: Molar Mass by Freezing Point Depression | Lab: Report Due on day 76    | SP 1.1, 1.2, 1.4, 2.2, 2.3, 5.1, 6.4, |
|    | Vonderbrink Lab # 11                         |                              | SP 7.1, 7.2                           |
| 74 | Review: Solutions/Solids                     | Study for Test               |                                       |
|    |  | Practice Test: Student Guide |                                       |
| 75 | Test: Chapter 12/13                          | Semester Test Review         |                                       |
| 76 | SEMESTER TEST REVIEW                         | Semester Test Review         |                                       |
| 77 | SEMESTER TEST REVIEW                         | SEMESTER Test Review         |                                       |
| 78 | SEMESTER TEST: PER 1,2,3                     | ENJOY YOUR BREAK!!!!         |                                       |
| 79 | SEMESTER TEST: PER 1,2,3                     | ENJOY YOUR BREAK!!!!         |                                       |

## AP CHEMISTRY CHAPTER 14 & 15 SCHEDULE

| Day | Activity/Discussion                      | Assign                             | Curriculum Framework Articulation |
|-----|--|------------------------------------|-----------------------------------|
| 80  | Seating Charts/2nd Semester Introduction | Read Pg. 557-563                   |                                   |
|     | Go Over Semester I Test                  | Ex. 14.1, 3, 4, 17, 18, 19, 22, 23 |                                   |
| 81  | Concentration and Rate                   | Read Pg. 563-569                   | 4.A.1:a, 4.A.1:b, 4.A.1:c         |
|     | Reaction Orders                          | Ex.14.5, 6, 27, 29, 32, 33, 35, 37 | 4.D.1, 4.D.2                      |
|     | Rate and Factors that affect Rate        |                                    |                                   |
| 82  | Concentration and Time                   | Read Pg. 569-575 Ex. 14.7, 8,      | 4.A.2:a, 4.A.3, 2.A.2:c           |
|     | 1/2 Life                                 | 39, 40, 41, 43, 47, 51, 52a        | 4.A.2:b, 4.A.3:d                  |
| 83  | Temperature and Rate                     | Read Pg. 575-581                   | 4.B.2, 4.B.3:c                    |
|     | Collison Model                           | Ex. 14.9, 10, 53, 57, 59, 61, 65   |                                   |
|     | Energy of Activation                     | 67                                 |                                   |

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|    |   |                                     |                                      |
|----|---|-------------------------------------|--------------------------------------|
| 84 | Reaction Mechanisms                     | Read Pg. 581-595                    | 4.B.1, 4.C.1, 4.C.2, 4.C.3           |
|    | Molecularity                            | Ex. 14.11, 12, 13, 14, 69, 73, 76   |                                      |
|    | Catalyst and Intermediates              | 78, 79, 80                          | 4.B.1, 4.C.1, 4.C.2, 4.C.3           |
|    | Pre Lab: Kinetics (CR3d)                | Pre Lab: Kinetics of Reaction       | 2.B.3:e                              |
| 85 | Lab: Kinetics of a Reaction             | Lab Report Due: Day 90              | LO 4.1, 4.3, 4.4, 1.4, 4.6, 4.8      |
|    |   |                                     | SP 1.4, 2.2, 4.2, 5.1, 6.1, 6.2, 6.4 |
| 86 | Quiz: Kinetics                          | Catch Up on Excercises              |                                      |
|    | Work Day on Lab Report/Excercises       |                                     |                                      |
| 87 | Review for Chapter 14 Test              | Ex. 14.81, 85, 86, 100              |                                      |
|    |   | Student Guide Practice Tests        |                                      |
| 88 | Test: Chapter 14                        | Read Pg. 611-618                    |                                      |
|    |   | Ex. 15.1, 2, 3, 4, 5, 6             |                                      |
| 89 | The Equilibrium Constant                | Read Pg. 619-623                    | 6.A.1, 6.A.3:a, 6.A.3:f              |
|    | Equilibrium Concept                     | Ex. 15.13, 15, 18, 23, 25, 28, 29   | 6.A.3.b                              |
| 90 | Heterogeneous Equilibrium               | Read Pg. 623-627                    |                                      |
|    | ICE Problems                            | Ex. 15.7, 8, 33, 35, 40, 41         |                                      |
|    | Calculating Equilibrium Constant        | Pre Lab: Determination of Keq       | 6.A.3:d, 6.A.3:e, 6.A.4, 6.A.2       |
| 91 | Lab: Determination of Keq of FeSCN      | Lab Report Due Day 96               | LO 1.16, 6.9                         |
|    |   |                                     | SP 2.2, 4.3, 5.1, 6.1                |
| 92 | Quiz: Calculating Equilibrium Constants | Read Pg. 627-630                    |                                      |
|    | Applications of Equilibrium Constants   | Ex. 15.9, 45, 47, 49, 52, 58, 59    | 6.A.3.C                              |
| 93 | LeChatelier's Principle                 | Read Pg. 630-640                    | 6.A.3:b, 6.B.1, 6.B.2, 6.c.3:e       |
|    |   | Ex. 15.10, 11, 12, 61, 62, 66, 67   |                                      |
| 94 | Activity: LeChatliers Principle (CR3f)  | Finish Chapter 15 Excercises        | LO 6.2, 6.5, 6.6, 6.8, 6.9           |
|    | Determination of Enthalpy Change        |                                     | LO 6.3, 6.4, 6.7                     |
| 95 | Quiz: Equilibrium/LeChatliers Principle | Optional Ex.72,83,89                |                                      |
|    | Review Chapter 15                       | Student Guide Practice Tests        |                                      |
| 96 | Test: Chapter 15                        | Read Pg. 651-655                    |                                      |
|    |   | Ex. 16.1, 2, 11, 14, 16, 18, 21, 25 |                                      |

## AP CHEMISTRY CHAPTER 16 & 17 SCHEDULE



# AP Chemistry Syllabus

| Day | Activity/Discussion                          | Assign                                     | Curriculum Framework Articulation    |
|-----|--|--|--------------------------------------|
| 97  | Go Over Chapter 15 Test                      | Read Pg. 655-658                           |                                      |
|     | Bronsted- Lowry Acids and Bases              | Ex. 16.12, 15, 17, 22, 26                  | 3.B.2:b, 3.B.2.C                     |
|     | Acid Base Strength                           |  |                                      |
| 98  | Auto Ionization of Water                     | Read Pg. 658-666                           | 3.A.2:a, 6.C.1:b                     |
|     | pH Scale                                     | Ex. 16.27, 28, 31, 34, 36, 38, 41          | 6.C.1:a, 6.C.1:b, 6.C.1:g            |
|     | Strong Acid and Base                         | 43, 47, 48                                 | 6.C.1:c, 6.C.1:d                     |
| 99  | Weak Acid                                    | Read Pg. 666-675                           | 6.C.1:e, 6.C.1:f, 6.C.1:g            |
|     | PolyProtic Acids                             | Ex. 16.3, 4, 5, 6, 51, 54, 56, 62, 67      | 6.C.1:h, 6.C.1:a                     |
|     | Ka Calculations                              | Pre Lab: Determination of Ka               |                                      |
| 100 | Lab: Determination of Ka for Weak Acids      | Lab Report Due Day 105                     | LO 1,20, 2.2, 6.11, 6.12             |
|     |  |  | SP 6.15, 6.16, 6.17, 6.2             |
|     |  |  | SP 1.4, 2.2, 4.2, 5.1, 6.3, 6.1, 6.4 |
| 101 | Weak Bases                                   | Read 676-681                               |                                      |
|     | Kb Calculations                              | Ex. 16.7, 16.69, 72, 73, 76, 78, 79        | 6.C.1:e, 6.C.1:f, 6.C.1:g            |
|     | Relationship between Ka and Kb               | 82,  | 6.C.1:h                              |
| 102 | Activity: Hydrolysis of various Salts (Cr3f) | Reaction of Salts Ex. 16.83, 86            | LO 6.23, SP 5.1, 6.4                 |
| 103 | Acid Base Quiz: Ka/Kb, pH calculations       | Read Pg. 685-693                           |                                      |
|     | Lewis Acid Base Definitions                  | Ex. 16.8, 9, 88, 90, 92, 93, 97            |                                      |
|     | Acid Base Behavior and Structure             |  | LO 6.15, 6.16, 6.17                  |
| 104 | Review Chapter 16                            | Optional Ex. 103, 111, 114                 |                                      |
|     |  | Student Guide Practice Tests               |                                      |
| 105 | Test Chapter 16                              | Read Pg. 703-707                           |                                      |
|     |  | Ex. 17.1, 2, 3, 4, 5, 13                   |                                      |
| 106 | Go Over Test                                 | Read Pg. 707-714                           |                                      |
|     | Discuss Common Ion Effect                    | Ex.17.14, 17, 18, 19, 22, 25, 29           | 6.C.3.E                              |
|     | Properties of a Buffered Solution            | Pre Lab: Preparation of Buffer             | 6.C.2                                |
| 107 | Lab: Preparation of Buffered Solutions       | Lab: Report Due Day 112                    | LO 3.7, 6.12, 6.16, 6.18, 6.19, 6.20 |
|     |  |  | SP 2.2, 2.3, 4.2, 5.1, 6.1, 6.4, 7.2 |
| 108 | Acid Base Titrations                         | Read Pg. 714-722                           | 6.C.1:l, 6.C.1:j, 6.C.1:k            |
|     | PolyProtic Acid Titrations                   | Ex. 17.5, 6, 7, 33, 34, 35, 36, 38, 41, 42 | 6.C.1:1, 6.C.1:m, 6.C.1:n, 6.C.1:o   |

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|     |   |                                     |                                 |
|-----|---|-------------------------------------|---------------------------------|
|     | Choosing Indicators for Titrations (CR3f)     | Pre Lab: Acid Base Titrations       | LO 6.14, 6.19, 6.12, 6.13       |
| 109 | Lab: Acid Base Titrations                     | Lab Report: Due Day 114             | LO 6.13, 6.14, SP 2.2, 2.3, 6.4 |
| 110 | Solubility Equilibria                         | Read Pg. 722-733                    | 6.C.3:a, 6.C.3:b                |
|     | Factors that affect Solubility                | Ex. 17.8, 9, 10, 50, 52, 54, 55, 59 | LO 6.21, 6.22, 6.23,            |
|     | Qsp   | 61, 65                              |                                 |
| 111 | Precipitation and Separation of Ions          | Read Pg. 734-739                    | LO 3.1, 3.2                     |
|     | Pre Lab: Separation and Qual. Analysis (CR3a) | Ex. 17.67, 69, 71                   |                                 |
| 112 | Lab: Separation and Qualitative               | Lab Report: Due Day 117             | SP 4.3, 5.1, 6.1                |
|     | Determination of Cations and Anions           |                                     |                                 |
| 113 | Quiz: Equilibrium Concepts                    | Finish Up on Ex. And Labs           |                                 |
|     | Review Chapter 17                             |                                     |                                 |
| 114 | Review Chapter 17                             | Optional Ex. 17.75, 85, 90, 95      |                                 |
|     |   | Practice Test in Student Guide      |                                 |
| 115 | TEST CHAPTER 17                               | Read: Pg. 785-790                   |                                 |
|     |   | Ex. 19.1, 19.2, 19.11, 19.12        |                                 |

## AP CHEMISTRY CHAPTER 19 & 20 SCHEDULE

| Day | Activity/Discussion                        | Assign                              | Curriculum Framework Articulation |
|-----|--|-------------------------------------|-----------------------------------|
| 116 | Go Over Test                               | Read Pg. 790-793                    |                                   |
|     | Spontaneity                                | 19.4, 5, 13, 15, 21, 24, 26, 28, 30 | 5.E.1, LO 5.12, 5.E.2, 5.E.3      |
|     | 2nd Law of Thermodynamics                  |                                     |                                   |
| 117 | Quiz over Day 115 Exercises                | Read Pg. 793-803                    |                                   |
|     | Molecular Interpretation of Entropy        | 19.6, 31, 34a, 35, 40a, 43, 44, 46, | 5.E.1                             |
|     | Third Law of Thermodynamics                | 48, 50, 53                          |                                   |
|     | Entropy changes in chemical reactions      |                                     | 5.E.2                             |
| 118 | Activity Molar Heat of a Reaction - (CR3e) | Lab Report Due Day 122              | LO 5.12, 6.24, 5.13, 5.14         |
|     |  |                                     | SP 2.2, 2.3, 4.3, 5.1, 6.1        |
| 119 | Gibbs Free Energy                          | Read Pg. 803-808 19.7, 8, 55,       | 5.E.2:d, 5.E.2:e, 5.E.2:f         |
|     |  | 57, 60a&b, 61a&b, 67, 71, 76        | 6.C.3:c, 6.D.1:a, 5.E.4:c         |

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|     |   |                                     |                                  |
|-----|---|-------------------------------------|----------------------------------|
| 120 | Free Energy and Temperature                           | Read Pg. 809-815                    | 6.D.1:c, 6.D.1:d                 |
|     | Free Energy and the Equilibrium Constant              | 19.9, 10, 77, 79, 82, 84, 86        | 5.E.2, 5.E.3, 5.E.5, 6.D.1       |
| 121 | <b>Quiz: Thermochemistry</b>                          | Student Guide Practice Tests        |                                  |
|     | Reveuw Chapter 19 - Thermochemistry                   | STUDY!!!!!!!!!!!!!!                 |                                  |
| 122 | <b>TEST CHAPTER 19</b>                                | Read Pg. 827-829                    |                                  |
|     |   | 20.1, 13, 14, 15, 17                |                                  |
| 123 | Go Over Test  | Read Pg. 830-835                    |                                  |
|     | Balancing Redox Equations                             | 20.19, 23, 24                       | 3.B.3:a, 3.B.3:b, 3.B.3:c        |
|     | Oxidation and Reduction                               |                                     | 3.B.3:D                          |
| 124 | <b>Quiz: Redox Reactions</b>                          | Read Pg. 835-837                    |                                  |
|     | Voltaic Cells   | 20.3, 4, 5, 27                      | 3.C.3:a, 3.C.3:b, 3.C.3:c        |
|     |   |                                     | 3.C.3:e, 3.C.3:f, 5.E.4:a        |
| 125 | Cell EMF  | Read Pg. 838-844                    | 3.C.3:d                          |
|     | Strengths of Oxidizing Agents                         | 20.29, 31, 37a&b, 41, 44, 47, 49    |                                  |
|     | <b>PreLab: Electrochemical Cells (CR3f)</b>           | Pre Lab: Electrochemical Cells      | LO 3.12, 3.13, 3.8, 6.7, 6.21    |
| 126 | <b>Lab: Electrochemical Cells</b>                     | Lab Report: Due Day 131             | SO 2,2, 2.3, 4.3, 5.1, 6.1, 6.4  |
| 127 | Free Energy and Redox Reactions                       | Read: Pg. 845-854                   | 3.C.3:3                          |
|     | Non Standard Cell Potentials                          | 20.7, 20.8, 51, 53, 55a, 64, 65, 68 |                                  |
| 128 | Electrolysis  | Read: Pg. 857-864                   | LO 3.13                          |
|     | Corrosion   | 20.11, 12, 86, 89, 94, 96           |                                  |
|     | <b>Pre Lab: Oxidation Reduction Titrations (CR3f)</b> | Pre Lab: Redox Titrations           | LO 3.12, 3.13, 3.8 6.7, 6.21     |
| 129 | <b>Lab: Oxidation Reduction Titrations</b>            | Lab: Report Day 132                 | SP 1.4, 2.24, 5.1, 6.1, 6.4, 7.1 |
| 130 | <b>Quiz: Electrochemistry</b>                         | Study Prac. Test in Student Guide   |                                  |
|     | Review Electrochemistry                               | STUDY!!!!!!!!!!!!!!                 |                                  |
| 131 | <b>Test: Chapter 20</b>                               | None                                |                                  |
|     |   | Begin Review                        |                                  |

**AP CHEMISTRY AP TEST REVIEW SCHEDULE & POST TEST**

# AP Chemistry Syllabus

| Day                          | Activity/Discussion   | Assign   | Curriculum Framework Articulation |
|------------------------------|---|--|-----------------------------------|
| R1-<br>R5                    | <b>Big Idea 1 Review</b>  | TBD  |                                   |
|                              | Pre Lab: Analysis of Alum (CR3b)  |  | SP 2.2, 2.3, 4.3                  |
|                              | Lab: Analysis of Alum   | Lab Report   |                                   |
| R6-<br>R9                    | <b>Big Idea 2 Review</b>  | TBD  |                                   |
|                              | Pre Lab: Synthesis, Isolation, Purification of Ester  |  | LO 2.10, 3.3, 3.4, 3.6            |
|                              | Lab: Synthesis, Isolation, Purification of Ester  | Lab Report   | SP 2.2, 4.2, 4.3, 5.1, 6.1        |
| R10                          | <b>AP PRACTICE EXAM</b>   |  |                                   |
| R11-<br>R14                  | <b>Review Big Idea 3</b>  | TBD  |                                   |
| R14-<br>R17                  | <b>Review Big Idea 4</b>  | TBD  |                                   |
| R18                          | <b>AP PRACTICE EXAM</b>   |  |                                   |
| R19-<br>R21                  | <b>Review Big Idea 5</b>  | TBD  |                                   |
| R22-<br>24                   | <b>Review Big Idea 6</b>  | TBD  |                                   |
| R25                          | <b>AP PRACTICE EXAM</b>   |  |                                   |
| R26-<br>R28                  | <b>OVERALL REVIEW</b>   | TBD  |                                   |
| <b>R29</b>                   | <b><u>AP TEST</u></b>   |  |                                   |
| Post<br>Test<br>5-10<br>Days | Students will research and develop a topic of their choice that will provide them with an opportunity to connect their content knowledge of chemistry to major societal and technological components. (CR4) | Students will present their report on the final 2 days of class. | BI 1-6; SP 1-7                    |