Chemistry 1A: General Chemistry: **Course Syllabus:**

Instructor Name: R. Culp, M.S.
Location: Reedley College
E-Mail: robb.culp@reedleycollege.edu
(Best contact: In person or email)
Office Hours: **There are no office hours.** *Plan to use down time in laboratory, or immediately following lab.*

Schedule Number: 59741
Units: 5
Lecture: T/Th 3:30-4:45 PM in PHY 76
Laboratory: T/Th 5:00 -7:50 PM in PHY 82
As a rule the lab will not dismiss before 7:50 PM

Course Description:
This is the first course in a two course sequence in general chemistry and is intended for students majoring in science or satisfying prerequisites for professional schools. Topics included in the course are atoms, molecules, and ions, chemical formulas, and equations, stoichiometry, gas laws, electronic structure of atoms, chemical bonding, atomic orbital, and molecular orbital theories, solutions, precipitation reactions, oxidation reduction reactions, introduction to acids and bases, thermochemistry, properties associated laboratory experiments, and volumetric and gravimetric analysis methods.

Required Materials (Recommended 2 gigabyte memory stick for transferring files)

- **Lecture Text.** Chemistry a Molecular Approach, by Nivaldo J. Tro [*2nd or 3rd (recommended) edition*].
- **Lab Text.** Laboratory Materials (Posted on Blackboard)
- **A simple scientific calculator: TI-30xa is recommended; it's simple and cheap.** Note: Only simple function calculators with small rectangular windows, capable of scientific notation (handles exponents of 10), and having log and 10^x functionality are allowed during examinations. **Graphing or programmable calculators are not allowed.** Nothing may be written on your calculator with the exception of your name; anything other than your name may be considered cheating.
- **Computer/Internet access.** Some materials for this class are posted on blackboard. Grade updates are available only by e-mail or in class. Access to an ACTIVATED Campus email is required.
- **Scantrons.** The final exam uses a scantron (882), answers to midterm exams are fill-in no scantron rqrd.

A.) COURSE REQUIREMENTS FOR A PASSING GRADE:

1.) **ATTENDANCE:** Class lectures begin promptly at the scheduled time. Attendance is graded as a part of your class participation grade. No allowance can be made if you fail to initial the attendance sheet that is available at the beginning of each class. Coming in more than late will count as an absence. Being on time means a couple minutes early. Please plan to arrive at the normal start time for the class and laboratory.

2.) **COME PREPARED FOR CLASS:** Do the assigned reading before class. This is an important component of your homework assignment. The classroom lecture moves at a VERY fast pace. If you want to be productive, and understand what is said during lecture do the assigned reading.

3.) **MINIMUM TIME COMMITMENT:** Success in college chemistry stands on three factors. You are asked to divide your time (8-12 hours per week, outside class) between all three (below) if you need an A, B or C grade. *Some students may find that more time is required so plan accordingly.*

- **~2 hours per week** to read and highlight the text before lecture on the topic. The reading assignment and the lecture topics are listed for each lecture at the end of this syllabus. Work the examples in the text, identify areas of potential difficulty. Get clarity and understanding of important topics before beginning homework. Lectures don't cover all topics; your instructor has to prioritize what is addressed in class. A very brief quiz on the reading assignment begins each week. *A 75% or better average reading quiz score triggers dropping the low score on homework and the low study guide score.*
- **~2-4 hours per week** to complete a careful post lecture review. PowerPoint slides are posted on line. Download these as handouts before each class and take additional notes. We will frequently do lecture examples that supplement slides examples. Review each lecture and do the following: (1) Define key terms; these were highlighted during lecture. (2) Rework ALL examples from the lecture and text. (**Make sure you understand each example.)** (3) Identify and transfer to a "3 x 5" card important equation setups, terms and methods for later review and study. The actual PowerPoint file from lecture is also posted and you may review this in detail at home.

- **~Minimum 4-6 hours per week** for homework. Homework consists of a mix of problems that should help you check your understanding of lecture concepts. Any adjusted average score below 90% will be recorded as is. Many students who fail the course have great homework scores. Do additional problems as needed to assure yourself that you understand the concepts from the lecture outline**. The homework questions are not found on the exams, exams probe your understanding of definitions examples and concepts based on the lecture outline.** In this course we do not do homework for completion, we do homework to help build understanding. 30% of exams will work at the higher end of homework and lecture.

4.) **Plan your special events carefully:** Attending a wedding out of town, caring for an ill relative, going on a cruise, having a baby, getting married or any significant distraction WILL place you at a statistical risk of failing the class. Your instructor can excuse you from attendance, but not from the required course work or information. **Exams, homework and laboratory are never excused.**

5.) **Chemistry Survival:**

- Decide today what grade you are going to accept, and commit yourself to achieving it. Half measures yield one quarter of the desired result. Just good enough is NEVER good enough! **If you push yourself to achieve, you will!**
- Don't go it alone, get a study partner! Working with a study partner has been shown to lift the average score by half a grade point or more. In the process you are accountable for a work ethic that yields success.
- Tutoring is available. Get help when you need it.
- **Who do you think you are?** *Regardless of what you do, expect to work at the level of a serious science or engineering major.* This class is targeted to that group. Doctors make up one percent of the US population, two percent are engineers. Conservatively the goals of students here represent only 5% of the US population. If you want to be one of the top 5%, you have to be better than the other 95%! "**You are who you decide to be."**
- **Do not delude yourself, this course and Chemistry 1B require a great deal from you. If you are less than industrious it will catchup with you here or next semester. A work ethic is required. Substandard work will be returned ungraded.**

B.) Course Policies and Descriptions:

1.) Course Grading Policies: The primary criterion for grading in this course is performance on exams, quizzes and in the laboratory. Borderline grades may be raised (1-2%) if the final exam grade reflects both your effort in the course and an increased understanding of the course material.

Grading: Your graded work is valued as follows for the purpose of calculating your overall grade:

	Number:	Percent of Grade:	Comment:
Home Work/Wkly Reading Quizzes		**10 %**	***HmWk (5 %) Reading Quizzes (5 %)***
Participation	33	**3 %**	***Attendance and class participation.***
Midterm Exams	2 Quizzes, 3 Exams	**40 %**	***Descriptions are on pg. 3 & 12***
Comprehensive Final Exam	1	**25 %**	***See pg. 3***
Laboratory	4 Quizzes (2.5% ea.), Labs (12% total)	**22 %**	***Attendance in Laboratory is Required***

% Overall = 0.07 x % HmWk + 0.03 x % Attn. + 0.40 x % Exam + 0.25 x % Final + 0.25 x % Lab

% Overall semester scores are converted to letter grades based on the following:

> 89.9 % A	80-89.9 % B	70-79.9 % C	55-69.9 % D	<55% F

2.) Description of Letter Grades: *An "A" grade reflects excellent work that yields clear evidence of a deep understanding of the theory taught throughout the course. These students have a clear, conversant, mastery of terms, theory and course calculations.* A *"B" grade reflects a good technical mastery of calculations and intermediate course concepts, but an individual who lacks the breadth of theory and application knowledge that an "A" student possesses. A "C" grade reflects a satisfactory functional understanding of most of the fundamental concepts and basic calculations.* Students who wish to argue for a higher grade need to have achieved a level of performance that provides clear evidence that a grade change is warranted. **No final grade will be modified unless both the laboratory and final exam score reflect mastery at the level of the new grade.**

3.) A brief reading quiz is taken each week during the first 10 minutes of lecture. Students are asked to answer a number of brief conceptual questions true false questions to gage their preparation for lecture. An average score of 75% or better allows students to drop a low homework score as well.

4.) Midterm Grades: Exams and quizzes are typically graded within a week of their administration. The exam scores are distributed by email the day they are entered. Once graded, exams are available for pickup in class. It is the student's responsibility to pick up the exam and check scores. A key for worked out problems is posted on BB. **Students have a one week deadline after the exams are made available to check answers and to register a complaint about the test or calculated score. There are no exceptions to this rule**. Please pickup your exam and review it in a timely manner.

5.) Midterm Exams (100 pts. Ea.): Each exam, as a rule, covers a specific set of chapters from the text (see exam descriptions in the schedule). The guide for exam content is the Course Lecture, Course Text and Assigned HmWk. Midterm exams consist of three sections (see below).

- **Section 1 (50 pts.):** 20-30 multiple choice questions that do not require calculations or written responses. These questions will probe your understanding of introductory terms, vocabulary, nomenclature and calculation set-ups. Read these carefully and circle the correct answer. This section is comprehensive regarding current and previous exam material. **(No Partial Credit)**
- **Section 2 (20 pts.)** (5-10 problems): These questions will ask for calculation setups, brief explanations, and fill-in or matching responses. These questions will probe your understanding of common applications, procedures, vocabulary, chemical nomenclature (every exam), and equation setups.
- **Section 3 (30 pts.)** (5-10 problems): These questions are intermediate to advanced multi-step problems. These are based on lecture, Lab Study Guides (tied to lecture) and on homework problems found toward the end of many homework assignments. These problems typically involve a manipulation of a basic equation, or they may be problems that are of necessity multistep procedures. In other instances, you may be asked to do a short derivation similar to one presented in lecture. Most exams will have one brief essay question. The questions in this section will evaluate the depth of student understanding at the middle to upper end of course expectations. (Partial Credit is Assigned.)

6.) Lecture Quizzes (Taken in Lab): Two lecture quizzes are administered during laboratory and are associated with the first chapters of the text. The first covers chapters 1-3 (60 minutes). It consists of 25 multiple choice questions (25 points total). The second covers chapter 4 exclusively. This chapter 4 quiz is entirely fill-in (90 min.). (75 points total). The second quiz is a predictor of student success in the course. Failure here puts the student at risk of failing the course. The combined quiz score represents 10% of the overall course grade.

7.) Midterm Exam Make-up Policies: If a student misses an exam due to illness or personal emergency, he/she needs to inform the instructor by email on or before the day and time of the exam. to arrange a make-up the exam within the week. **Exams are made-up before the exam is returned to the class**. After the exam is returned, there are no exam makeups. Makeups are only offered by appointment before or after class. Students may receive a zero score for failing to notify the instructor on or before the day and time of the exam or for failing to arrange a time to make-up the exam. **Students are allowed to miss and makeup one exam per-semester.**

8.) Final Exam: The final exam is comprehensive and is required for all students regardless of their performance in the course. The final consists of 60 questions which span chapters 1-11 in our text. The questions are multiple choice. Students will need to bring a scantron 882, pencil, eraser, and a non-graphing calculator. Everything else will be provided. The purpose of the final is to probe a student's understanding of course concepts and preparation to take Chem. 1B. A rule of thumb is that the exam is one third chemistry calculations, one third terms and explanations and one third theory. What the final exam lacks in depth, it makes up for in breadth.

Failure to take the final yields an "F" final grade. No Exceptions.

9.) Incomplete Grades: An "I", incomplete, grade may be assigned in a course only by approval of the course instructor if all of the following conditions are met: The student has completed all course work except the final examination. The student has a serious and verifiable reason for not completing the final. *The student has a passing grade in the course at the time the incomplete, "I" grade is assigned.* "I" grades are rarely assigned in Chemistry 1A.

9.) **Laboratory:** The laboratory course component is designed to teach the concepts and techniques of chemistry as an experimental science. Laboratory experiments may also provide significant support for lecture concepts. **LABORATORY ATTENDANCE IS MANDATORY.** A required component of laboratory attendance is bringing the required items for lab (Lab Manual, calculator, lab coat, shoes, and etc.) **Failure to come prepared for lab will count as an absence.** Students who fail to meet the laboratory attendance requirement or **fail to complete three laboratory reports** will receive a semester "F" grade. "I" grades are not assigned based on failure to attend laboratory or complete assignments, even in the circumstance where a student has been present to acquire the data in Lab. Use your allowed absences wisely.

10.) **Attendance:** Attendance is a component of your participation grade. It is taken at the START of each lecture, and at the start and finish of each laboratory meeting. Class participation implies that you were present at the start of lecture and at the start and conclusion of laboratory, and participated in classroom or laboratory activities.

C.) College Policies: The administration of this course adheres to ALL policies as posted in the 2012-2014 Reedley College Catalog. Below are excerpts that specifically important and apply to Chemistry 1A.

1.) **Students with Disabilities:** This course will adhere to the college policy regarding students with disabilities. Upon identifying themselves to the college and then the instructor, students with disabilities will receive reasonable accommodation for learning and evaluation. For more information, contact Disabled Students Programs & Services (638-0333).

2.) **Academic Dishonesty:** Students at Reedley College are entitled to the best education that the college can make available to them, and they, their instructors, and their fellow students share the responsibility to ensure that this education is honestly attained. Because cheating, plagiarism, and collusion in dishonest activities erode the integrity of the college, each student is expected to exert an entirely honest effort in all academic endeavors. Academic dishonesty in any form is a very serious offense and will incur serious consequences. This course adheres to the Reedley college policy regarding cheating and plagiarism.

- **Cheating** may include, but is not limited to, copying from another's work (THIS APPLIES TO STUDENTS WHO COPY EACH OTHERS LAB WORK), supplying one's work to another, giving or receiving copies of examinations without an instructor's permission, using or displaying notes or devices inappropriate to the conditions of the examination.
- **Plagiarism may include**, but is not limited to, failing to provide complete citations and references for all work that draws on the ideas, words, or work of others, failing to identify the contributors to work done in collaboration, submitting duplicate work to be evaluated in different courses without the knowledge and consent of the instructors involved, or failing to observe computer security systems and software copyrights.
- **Incidents of cheating and plagiarism** may result in any of a variety of sanctions and penalties, which may range from a failing grade on the particular examination, paper, project, or assignment in question to a failing grade in the course, at the discretion of the instructor and depending on the severity and frequency of the incidents.

3.) **Disruptive Classroom Behavior:** The classroom is a special environment. Students are expected to behave in a manner consistent with and promoting the goal of learning. Students who talk during lecture, or behave in ways that are less than respectful of others, will be asked to leave the class. The instructor for this course reserves the right to ask students to continue the course without attending lecture or have a student removed from the course in extreme cases. Please be courteous and respectful to all students in the course. This course adheres to Reedley College's Student Code of Conduct Policy (Board Policy 5520 and Educational Code 76032)

4.) **No-Show Drops:** A student will be dropped from this course (lecture and lab) if they fail to attend lecture during the first week of instruction and do not notify the instructor by email on or before 5 PM on the day of their absence. If a student is waiting for the seat, it will immediately be assigned to another student. Students dropped for failure to attend are not easily readmitted, since another student frequently is given the seat. **With the exception of a "no-shows" it is a student's responsibility to properly drop the course.**

5.) Dropping the Course: Students may be dropped from class if they fail to attend the first class session of the semester. There are no institutionally approved excused absences for any reason to miss this first day of instruction. Additionally students who miss two consecutive weeks without communication with the instructor may be dropped. Students are expected to be in the classroom at the time the class begins. Instructors are required to take attendance at each class session and to report any student who is absent for two successive weeks of instruction. Unless there are significant extenuating circumstances, that student will be immediately dropped from class by the instructor if the absences are occurring before 50 percent of the class is expired. **STUDENTS, WHO FAIL TO TURN IN THREE LABORATORY REPORTS, MISS THREE CONSECUTIVE WEEKS OF LECTURE OR LAB WILL BE DROPPED**. If poor attendance occurs after the 50% drop deadline, a failing grade will result.

In all cases it is the student's responsibility to drop a class in which she/he no longer wishes to be enrolled.

D.) Descriptions of Course Assignments:

1.) Assignment Formatting for a Successful Grade: Work that looks like the work of a professional will receive a much better grade than that of a typical high School Student. **Work that is below minimum standards will be returned ungraded.** Laboratory reports and homework that are returned ungraded will not be regarded later

a.) Handwriting: All homework assignments, Laboratory Experiments, Study Guides, Exams, and Quizzes, with one exception will be handwritten. Any answer submitted by a student must be easily read, neat and properly formatted. Written responses that are graded will need to meet a few minimal criteria. *Follow the bullets below or your work will not be graded.*

- **Laboratory data will ALWAYS be written in black pen,** No Whiteout will EVER be used. A single line strikes through the error and the correct value is entered next to the original. Do not use any color pen other than black. Erasable pens are not acceptable.
- Homework, and calculations are done neatly in pencil, using a good eraser to erase errors.
- **All responses are neatly printed** with capital letters at the start of each sentence, while using correct spelling, and punctuation.
- **Letters and numbers are universally well formed** and presented in a neat horizontal orientation.
- **There is no ambiguity in the presentation of numbers and equations.** If there is some doubt as to the numbers or relationships within a student response it will not be graded.
- **The font used in a written response will be large enough to be easily read.**

b.) Answers to Questions: Answer questions compactly and **COMPLETELY** address the question asked. Additionally, *No Equation Setup, No Units, No Rounding For Significant Figures always yields a poor grade or no grade.* **No Exceptions..EVER!**

- **Yes/No Answers:** Many questions on lab reports, homework and on exams will ask for a yes or no answer AND an explanation. Failure to address the explanation will yield NO points for the question. As a rule questions require more than a one or two word answer.
- **Any calculation requiring unit conversions** will use the format for unit conversion. Proportion is not an acceptable method.
- **Equation Set-ups:** Frequently students turn in a list of answers for study guides, post labs, or homework sets. **NO NUMERICAL ANSWER is ever valid in this course without formally showing how it was obtained.** Easy or hard calculations ALWAYS require a formal equation.
- **Units:** Unless data is collected on a table where the column or row is labeled by name and unit, "units" will be reported for every number recorded as a result or within a mathematical equation.
- **Significant Figures:** Answers associated with single step calculations are first recorded in an unrounded form with units at the conclusion of a calculation and then in rounded form beside the original. Longer multistep calculations are not rounded until the final step has been completed. The final result is first recorded and then the correctly rounded final result is recorded beside it.
- **In the event there is not enough room on a laboratory report form,** or study guide to show all the work required to obtain a particular result, students will write in the space allowed for the calculation: Please write, **"SEE ATTACHED."** Then very clearly label and attach the calculation to the report form or study guide. If the answer is not easily found it will not be graded.

c.) Plagiarism: Study partners are allowed to share ideas, experimental raw data and methods but not answers. If you copy your friends work, he/she will inevitably make a calculation error or misstatement that identifies that work as belonging to a single student. If your work is identical, neither paper will be graded.

2.) Laboratory Reports: ~50 % of the laboratory score is represented by laboratory experiment reports. We will complete more than 20 reports during the semester. The procedures and forms are found in the lab book. The normal schedule after the completion of the third week will be as follows. During the **last half hour of lab**, the instructor will address the critical information for preparing for the next lab. Students will complete a standard format prelab (see below) and the prelab form in the lab book. **Both components are due as a student arrives for lab at the next meeting.** These docs are date stamped and held by the instructor until the lab report is turned in. No Lab is graded unless the prelab was turned in on time. The prelab is graded with the lab report. FAILURE TO TURN IN THREE PRELABS, OR THREE COMPLETED LAB REPORTS OR SOME COMBINATION YIELDS AN AUTOMATIC "F" SEMESTER GRADE.

Typically the instructor will have a short safety lecture and then turn students loose to complete the laboratory experiment. The Lab report and post lab are due at the start of the next lab meeting. Attendance is taken at the end of the laboratory period. ***No credit is granted for a laboratory unless the student was present of the entire laboratory period.***

a.) Prelab Format For All Labs: This prelab cover page is written by the student and attached to the front of the prelab form found in your lab book. The prelab cover page will neatly address the same seven questions for each laboratory experiment. It is due as the student arrives for lab. **Do not copy someone else's. The lab will not be graded without a attached signed prelab.**

(1) At the top of the handwritten prelab cover sheet write the name of the experiment.
Example: *Empirical Formula Ratio of a Copper Sulfide Compound*

(2) Below the Experiment Write Your Name
Example: *Robert Smith*

(3) What is the overall goal of the experiment in no more than two sentences?
Example: *In this experiment we will determine the empirical formula ratio of a copper sulfide compound resulting from the reaction of copper metal with elemental sulfur.*

4.) What is the essential information needed to communicate the method? (100 words or less)
Example: *A one gram sample of copper wire is massed with good precision in a premassed porcelain crucible. The copper metal is covered with ~20 grams of sulfur and heated on a clay triangle at high temperature in a well vented hood. After heating the cooled crucible is reweighed and the net mass of sulfur that remains is calculated. The moles present as copper and sulfur are determined followed by the whole number empirical mole ratio for the compound.*

(5) What are the sources of potential error for this experiment?
Example: *The experiment assumes complete reaction of copper with sulfur. If the reaction is incomplete the result will yield a smaller number of moles of sulfur and introduce an error into the calculated formula.*

If the reaction is removed from the heat prematurely excess sulfur will not be driven off and a higher final mass for sulfur will result. This will yield a larger number of moles for sulfur than expected and a potential error.

(6) What are the safety considerations for this experiment?
Example: *The vaporized sulfur is very toxic so the experiment must be done in a hood.*

The crucible will be very hot and is delicate when heated. It is important to handle it with great care.

(7) What are the practical considerations for this experiment? **Example**: *A large excess of sulfur and very fine copper wire are required to assure complete reaction in the experiment.*

3.) Homework: In many classes homework is done for a grade. In most chemistry courses homework is designed to practice the skills and concepts that students learn in lecture and through self-study. It is intended to be the last step in the study process. By completing homework problems students will identify areas they need more work on and prove their understanding of other topics. Successful students will learn what they understand well and identify topics for further study. Homework problems should be addressed as though they were exam questions which in some cases is correct. As with exam questions, we are less interested in the answer than in probing a student's understanding of the process needed to obtain the answer. A secondary goal is to retain hard to learn procedures, definitions and calculations with the homework so they can be reviewed for exams. **So in short homework is not a chore, it is practice.**

Weak areas require more work above time spent on homework and strong areas we can set aside until reviewing for the exam.

b.) Homework Format: To better achieve the goals above this course requires traditional written homework. Students may include notes comments or any useful info regarding problems worked for homework. Below is the minimum format. The info below also applies to exam questions.

- **General Information:** Please turn in problems in the assignment order. For each question include a brief summary of the question and its number. The entire pack should be stapled in the upper right hand corner, no paperclips or folded corners please.
- **Definitions:** Answers will have enough information to convince the grader that the student both understands the concept and has set it on paper at a level where that information can be retained for future reference. Sentence or two sentence responses are the norm. One or two word responses are not scored.
- **Processes:** Questions that ask the student to identify the steps or process to obtain a result will have enough information to convince the grader that the student both understands the process and has set it on paper at a level where that information can be retained for future reference. Clear well thought out flow charts, or numbered steps are the expectation.
- **Calculations:** Students will identify the variables explicitly provided in the problem and those implicit to the calculation. If a simple or multistep derivation is required, it will be included with the problem. Students will use the formatting required for all calculations in this course. These steps are modeled in how examples are done in lecture.
- **Homework is due at the start of laboratory each Tuesday.** It will normally be graded and returned during the next lab. Late homework is not accepted.
- **Homework Rubric: Each homework set is scored as 10 pts. possible.**
  - **Qualitative Overview (0-5 pts.):** Students will score zero points if the homework is a list of answers without showing equation set-ups, or does not include the question answered. The grader will flip through the homework and observe the general attention to detail and usefulness of the work product. Points are lost for sloppy presentation, significant figure errors, poor calculation set-ups, and formatting errors. **Handwriting and presentation is an important component of all assignments, if your work cannot be easily read, or your numbers cannot be determined with good precision it will not be graded.**
  - **Quantitative Overview (0-5 pts.):** A set of five problems chosen at random from throughout the set are evaluated for each week's homework. The following criterion is used: (1) Is the answer correct? (2) Does the answer have the correct units and significant figures? (3) Is the equation correctly formatted? (4) Did the answer completely address what was asked in the question? (5) ***Within the problem, did the student show good evidence that he/she understood the concept, method, or process behind the question?***

    THE REAL GRADE FOR HOMEWORK EFFORT IS ON THE EXAMS. A student who **understands** the homework they completed, will be better prepared for the exams, than the student who rushed to complete each question. *Completion* and *Understanding* are not always the same. Problems from the challenge problems are asked on the third section of each exam. Challenge problems or similar always represent 10% or so of each exam.

Reedley College Course Outcomes and Objectives for Chemistry 1A

I. COURSE OUTCOMES:

Upon completion of this course, students will be able to:

A. Collect and analyze data in the laboratory and have reasonable conclusions.
B. Utilize the periodic table in calculations and analyses involving molecules and compounds.
C. Apply math skills to solve chemical problems.

II. COURSE OBJECTIVES:

(Specify major objectives in terms of the observable knowledge and/or skills to be attained.)

In the process of completing this course, students will:

A. Use systematic nomenclature to name and classify chemical species.
B. Predict ionic and covalent bonding between species.
C. Convert from the English to the metric system in weights, volume, and linear measurements.
D. Calculate molecular weights, formula weights, gas volumes, temperature, pressure concentration of solutions, molarity, empirical and molecular formulas, and percentage composition.
E. Define the structural peroidiity of the elements and discuss the trends in all directions on the periodic chart and the terms for grouping elements, i.e., metalloids, transition elements, inner transition, etc..
F. Use stoichiometric relationships to calculate quantities of reactants, products, limiting reactants, theoretical yields, percent yields, and chemical formulas.
G. Describe covalently bonded structures using Lewis theory, valence bond theory (including hybrid orbitals), and molecular orbital theory of diatomic molecules.
H. Define the theoretical and mathematical description of ideal gases, including the concepts of temperature and kinetic energy distribution.
I. Identify types of reactions, predict the outcomes of chemical reactions, and write and balance chemical reactions.
J. Apply the first law of thermodynamics, contrast internal energy and enthalpy, describe how energy changes are related to temperature, atomic motions, and change in chemical bonding and perform thermochemical calculations.
K. Describe colligative properties of solutions of ionic and non-ionic substances and solve their numerical problems.
L. Effectively collect, record, and analyze experimental data, recognize the limitations of measurements and identify sources or error, and interpret experimental results and correlate experimental results with the appropriate theory.

Fall-2014 Lecture and Lab Schedule **Chemistry 1A** **Culp**

Week	Date	Ch. & Sec.	Lecture and Laboratory Outline and Due Dates:
1	8/12	1.6-1.8	**(1) Quick Syllabus Overview, (2)** Measurement; Sig Figs, Chemical Problem Solving Strategies, Unit Conversions, and Density.
			Lab: (1) Detailed Introduction to Chemistry 1A **(2)** Laboratory Safety: *No student will be admitted to class without having been present for the safety lecture. (Signed safety forms are due Immediately after the safety lecture.)* **(3)** Baseline Prerequisite Eval. Quiz (30 min.)
	8/14	1.1-1.6	(1) Introduction to the Scientific Method, (2) States of Matter: Elements, Compounds, Mixtures; (3) Physical & Chemical Changes, (4) Derived Units: Volume, Energy and Work. **Please follow the format requested in the syllabus.**
			Lab: (1) Lab. Operations and Reports, (2) *Download and Print "Significant Figures and Unit Conversion" Due in lab on 8/19. Can't Read It/No Calc/No Units/Wrong Format….* NO GRADE. **Please Self Correct.** (3) The Mass of a Penny **(CULP) (due today)**
2	8/19	2.1-2.5 ***Beginning Today:*** *Lab Coats and Goggles are required in Lab.*	**Foundations of Modern Atomic Theory:** (1) Lavoisier (Law of Conservation of Mass), Proust (Law of Definite Proportions), Dalton (Atomic Theory, and Law of Multiple Proportions), Relative Atomic Weight, 1st Periodic Table (2) Origins of the Nuclear Atom: Thomson & Milliken (Electron), (3) Rutherford's Gold Foil Experiment (Modern View of the Atom).
			Lab: Expt. 2: Mass Volume and Density (CULP) *" Due at the end of lab on 8/21"*
	8/21	2.6-2.8	**Describing Atoms:** Elements and Ions: (4) The Subatomic Particles, (5) Element Atoms and Periodic Table, (6) Isotopes, (7) Atomic Weights, (8) Ions and Periodic Table &Trends.
			Lab: Expt. 3: Percent Water in a Hydrate (CULP) (Due 8/26)
3	8/26	3.1-3.6	**Describing Molecules and Compounds:** (1) Binary Molecular Elements and Water. (2) Introduction to Chemical Bonds, (3) Introduction to Chemical Formulas, (4) Identifying Elements and Compounds by Type. **Chemical Nomenclature:** (5) Type I Ionic Compounds, (6) Type II Ionic Compounds, (7) Polyatomic Ions. (8) The Acids: Binary Acids and Oxyacids (Ternary). (9) Molecular Compounds.
			Lab: Chemical Nomenclature Handout **(due 8/28) (self-correct before turning in) A solid understanding of nomenclature is required for every exam and lab quiz.**
	8/28 **8/29 is the last day to register or drop without a "W"**	2.9 & 3.7-3.11 **Lec./Lab Quiz in Phy 76**	**Fundamentals of Mole Calculations, Conversion Maps and Conversions, Applied to Compounds: (**10) Molar Mass of a Compound, (11) Avogadro's Number, (12) Formula Ratio, (13) Determining Empirical and Molecular Formulas. (14) Three Step Strategy to Balance Chemical Reactions by Inspection.
			Lec/Lab Quiz: Completed Expts. + S.G.s 1 and 2 (1 hr.) & Lec. $Quiz_1$ Ch. 1-3.6 (1.75 hr.). Nomenclature Memorization: Acids, poly atomic ions and common lab. chemicals. Standard Deviation Calcs., using a calibration curve. 3 hrs are allotted. If you do not know this material well you will not finish.
4	9/2	3.9 & 4.1-4.3	(1) **Combustion Analysis, Reaction Stoichiometry:** (2) Introduction to Reaction Stoichiometry and conversion Maps. Theoretical Yield: (3) Excess Reactant Problem, (4) Limiting Reactant Problem, (5) Percent Yield, (6) Mass Percent Composition
			Lab: Expt. 4: Atomic Weight of Copper **(CULP)** Complete 3 trials and report average. *This lab is graded for precision, you may do a 4th trial if needed.* **Completed on 9/4.**
	9/4	4.4 **Beginning Today:** Prelab is due before starting the Expt	Four Applications of the Molarity Unit: 5.) Molarity and Molar Concentration by Definition, (6) Moles from Volume and Molarity, (7) the Dilution Equation. (8) Finding The Molarity given percent composition and solution density.
			Lab: Complete Expt. 4 (Due 9/4) and Start "Mole/Reaction Balancing Handout" (Due 9/9)
5	9/9	4.5-4.8	**Aqueous Reactions:** (8) Acid-Base Titration: Liquid-Liquid and Solid Liquid. (9) Electrolytes, Nonelectrolytes, and Solubility Trends, (10) Aqueous Reactions That Form Precipitates, (11) Aqueous Reactions that Form Gases, (12) Aqueous Reactions That Form Molecular Substances. Representing Aqueous Reactions: Molecular Reaction (Review), (13) Complete Ionic Reaction, (14) Net Ionic Reaction. (15 Titration Calcs. **(Titration SG)**
			Lab: Experiment 5: The Formula of a Hydrate **(Culp) (Due 9/9)**
	9/11	4.9 and 18.2	Finish Titration Calcs. Oxidation States, Electronegativity and Introduction to the "Half Reaction Method" of Balancing Oxidation Reduction Reactions. Most of the needed information is supplemented in the lab study guide. ***No Textbook Homework***
			Lab: Lec. Quiz 2 Ch. **2.9, 3.7-3.10 & 4.1-4.8** (1.5 hr.) Comprehensive survey of introductory concepts from lec. and lab.

Week	Date	Ch. & Sec.	Lecture and Laboratory Outline and Due Dates:
6	**9/16**	**5.1-5.4**	Introduction to Kinetic Molecular Theory, The Definition of Pressure and the Empirical Gas Laws (overview) **Gases: (1)** What is Pressure? (2) The Units of Pressure, (3) Defining the Empirical Gas Laws and Applications.
			Lab: Expt. 5: Ionic Rxns (CULP) Make detailed observations, balance reactions and write the net ionic reaction. (Due 9/18)
	9/18	**5.5, 5.7-5.8**	(4) Ideal Gas Law, (5) Molar Volume and STP, (6) Gas Density and Molar Mass Calc. (6) Gas Phase Mixtures. **Gas Law Applications:** (7) Changing Condition Problems, IGL, (8) Stoichiometry. (9) Discussion of the Assumed Characteristics of an Ideal Gas.
			Lab: Expt. 7 Preparation of Alum (CULP) This lab is completed on 9/23. Plan to finish everything this night except the collection of the crystals and the final mass of Alum. This lab requires a careful reading of the introduction to answer prelab and the post lab questions.
7	**9/23**	**5.6, 5.8-5.10**	(9) Dalton's law of Partial Pressures, (10) Defining an Ideal Gas According to Kinetic Molecular Theory: Molecular Velocities, Diffusion, and Effusion. (11) Real Gases and an Explanation of Non-ideal Behavior (Van der Waals Eqn.).
			Lab: Experiment 8: Titration of an Unknown Carbonate Solution and the Determination of the Percent Composition of a Solid Sodium Carbonate Unknown (Due 9/25). (CULP) (Two day lab which includes a Study Guide 5 (Due 9.30).)
	9/25	**5.1-10**	Finish Ch. 5 and review kinetic molecular theory and applications.
			Lab: Experiment 8: Titration of an Unknown Carbonate Solution and the Determination of the Percent Composition of a Solid Sodium Carbonate Unknown (Due 9/25). (CULP) (Two day lab which includes a Study Guide 5 (Due 9.30).)
8	**9/30**	**6.1-3**	**Thermochemistry:** (1) Defining Terms, (2) Defining Units, (3) The First Law of Thermodynamics: (4) Explanation of Internal Energy, (5) An Example Involving Heat and Work.
			Lab: Experiment 10: Titration of Citric Acid in 7-Up Lab Practical Pt A. **(CULP)** **Pickup your lab from Mr. Culp and return it when done (Due 10/2).**
	10/2	**6.4-5**	**Thermochemistry (Quantifying Heat and Work):** (6) Heat Measurement (Constant Pressure Cond.). (7) Work: Pressure-Volume Work, (8) Heat Measurement (Constant Volume Cond.), Bomb Calorimeter Example.
			Lab: Titration of Citric Acid in 7-Up Lab Practical Pt B. **(CULP)** **Due at the end of class. Technique and precision are graded (Due 10/2).**
9 **10/10 last day to drop with a "W" grade.**	**10/7**	**6.6-6.7**	**Thermochemistry Enthalpy of Reactions:** (9) Introduction of Enthalpy, (10) Enthalpy Under Constant Pressure Conditions (Derivation), (11) Characterizing Enthalpy Is Exothermic or Endothermic, (12) Reaction Enthalpy a Stoichiometric Quantity. (13) Measuring Enthalpy Using a Coffee Cup Calorimeter,
			Lab: Experiment 9: Molar Mass of a Volatile Liquid (3 trials) (CULP)
	10/9	**6.8-6.10**	(14) Application of Hesse's Law and Calculating Standard Enthalpy Change For a Reaction Using Stnd. Heats a Formation.
			Lab: Prelab Discussion of Calorimetry (1 hr) Laboratory Quiz (1 hr. 50 min.)
10	**10/14**	**7.1-7.4 Exam 2**	**Lecture: (1) The Nature of Light:** (2) The Electromagnetic Spectrum. Characteristic Behaviors of Light: (3) Interference (Constructive Destructive) and Diffraction, (4) "Particle Nature" (Photons), (5) The Energy of a Photon, (6) The Photoelectric Effect, Shooting Photons at a Metal Target, (7) The Atomic Emission Of "H" and Neil Bohr's Model of The Atom, (8.) The Rydberg Equation.
			Lab. Exam 1: (Chapters 5 and 6). This exam includes a multiple choice section that covers fundamental terms, equation set-ups and theory from both chapters. The fill in portion specifically addresses some or all of the following: Work, Internal Energy, Calorimetry, Enthalpy, Reaction Energy, and Hess's Law.
	10/16	**7.5-7.6**	**The Nature of the Electron:** (9) Dual Nature of the Electron; Particle and Wave, (10) The DeBroglie Wavelength of an Electron, (11) The Electron's Complementary Properties and Heisenberg's Uncertainty Principle, (12) Solutions to Schrödinger's Equation and Quantum numbers, (13) The Rydberg Equation (Energy Associated With The Principle Quantum Number), (13) The Shapes of The Atomic Orbitals (Probability Densities)
			Lab: Experiment 11: Determination of a Calorimeter Constant (CULP)

Week	Date	Ch. & Sec.	Lecture and Laboratory Outline and Due Dates:
11	10/21		**Finish Ch. 7 begin Ch. 8 see above and below.**
			Lab: Experiment 12: Heat Capacity of Metals (Dulong and Petit Law) (CULP)
	10/23	8.2-8.3	**Periodic Properties of the Elements:** (1) The Periodic Law, (2) Ground State Electron Configuration of Hydrogen (s, p, d, and f orbitals, electron spin and sub level splitting), (3) Pauli Exclusion Principle. (4) Sublevel Energy Splitting in Multi-Electron Atoms: (5) Shielding and Effective Nuclear Charge (Zeff.), (6) Sublevel Penetration, and General Energy Ordering of Orbitals For Multi-electron Atoms. (7) Writing Electron Orbital Diagrams and Valence Electrons.
			Lab: Experiment 13: Absorption Spectrum of Dyes **(CULP)**
12	10/28	8.4-8.8	**The Explanatory Power of Quantum Mechanics Applied to the Periodic Table:** (8) Electron Configurations and the Modern Periodic Table. (9) Formation of Main Group Element Ions. (10) the Trend in Atomic Radius (Covalent Radius). (11) Periodic Trend in Ionic Radius. (12) Periodic Trend In First Ionization Energy for Main Group Elements. (13) Periodic Trend in Electron Affinity. (14) Metal Nonmetal Character.
			Lab: Experiment 14: Determination of an Unknown Potassium Permanganate Solution by Using Spectroscopy. A discussion of Beer's Law. **(CULP)**
	10/30	9.1-9.5	**Survey of Chemical Bonds:** (1) Lewis Theory Framework. (2) Formation of An Ionic Bond, (3) Energy Associated With the Formation of an Ionic Bond (Lattice Energy and the Born-Haber Cycle), (4) Predicting Relative Lattice Energies. (5) Survey of Covalent Bonding Using Lewis Theory.
			Lab: Quiz 3 (Labs 15-16, 21-23, 27) The quiz includes probing questions regarding the theory of each experiment, the calculations used in each, and is comprehensive regarding fundamental mole calculations and chemical nomenclature.
13	11/4	9.5-9.11	**Distribution of Charge in Chemical Covalent Bonds and Within Molecules:** (6) Electronegativity and Bond Polarity, (7) Dipole Moments and Percent Ionic Character. Lewis Theory, (8) Lewis Diagrams, Resonance and Formal Charge. (9) Octet Rule Exceptions. (10) Bond Energies and Bond Lengths.
			Lab: Lab 16: Reactions of Copper **(Stnd Set-up) (CORNEL) Use Data Sheet by Culp**
	11/6		**Exam 3:** (Chapters 7, 8 and 9) This exam includes a multiple choice section that covers fundamental terms, equation set-ups and theory from chapters 7, 8, and 9. The fill in portion specifically addresses some or all of the topics listed for each chapter. *Explanations are more important than computations for most of this exam.*
			200 PT LAB PRACTICAL: Back Titration of a Solid Sodium Carbonate Unknown. Prepare the Prelab (Due 11/6) It will be returned to you next week as you begin the lab. The prelab includes your proposed procedure, the data form you develop and a sample experimental calculation. The only materials allowed for the lab next week will be the procedure you develop this evening. Plan carefully, ask your questions tonight.
14	11/11	Holiday	**Holiday**
	11/13	10.2-10.5	**Valence Bond Theory:** (1) Electron Group Geometry. (2) Effect of Lone Pairs of Electrons on Bond Angles. (3) Determining Molecular Geometry and Polarity.
			200 PT LAB PRACTICAL: The only materials allowed for the lab next week will be the procedure you develop this evening. Please maintain exam conditions during the expt. No Talking, no cell phones or sharing information. Precision and format are critically graded.
15	11/18	10.6-10.8	**Valence Bond Theory:** (4) Orbital Overlap as a Chemical Bond (energy Discussion), (5) Hybridization of Atomic Orbitals, (6) Formation of Bonds, and Molecular Geometry. (7) Essentials of Molecular Orbital Theory.
			MSDS Assignment (Due 12/2) Lecture/Video/Library Tour (?) This assignment culminates in a five page paper due 12/2. The chemical selected for the paper is due by 11/25 by email. First come first serve. No Duplicate Compounds will be Assigned. Baseline points for this assignment is 90% max. **Extraordinary work will be rewarded with higher scores. This assignment is not accepted late. 200 pts**
	11/20	11.2-11.3	**Properties of Gases, Liquids and Solids**: (1) Molecular Description of Liquids and Solids, (2) Discussion of Intermolecular Forces (Dipole-Dipole and Dispersion Forces). (3) H. Bonding.
			Lab: Molecular Geometry Part 1 (CULP) (Due 11/25) To earn full credit your Lewis diagrams and molecular projections need to be very well presented. Do your preliminary work on binder paper and transfer your neat, completed and correct work to the report form. Students who earn full credit will show proof of their understanding in the quality of their work. This assignment is graded carefully.

16	**11/25**	**11.4-5**	(4) Explanation of Aqueous Solutions of Ionic Compounds. (5) Surface Tension, Viscosity and Capillary Action. (6) Phase Changes. (7) Clausius-Clapeyon Equation to Determine the Heat of Vaporization and Examples.
			Lab: Molecular Geometry Part 2 (CULP) (Due 11/25) To earn full credit your Lewis diagrams and molecular projections need to be very well presented. Do your preliminary work on binder paper and transfer your neat, completed and correct work to the report form. Students who earn full credit will show proof of their understanding in the quality of their work. This assignment is graded carefully.
	11/27	**Thanksgiving**	**No Class**
17	**12/2**	**11.6-11.8, 11.11-11.12 Ch. 12**	**Phase Changes of Pure Substances**: (8) Fusion and Sublimation, (9) Heating Curve of Water and Calculating the Energy (Ice →Steam and Reverse), and (10) Introduction to Phase Diagrams. (11) Crystalline Solids (Unit Cells), (12) Crystalline Solids by Type.
			Lab: Lab Quiz 4
	12/4		**Exam 4 (Ch. 10-11)**
			Lab: (Work through a sample final 25 pts)
18	**12/11**	**Final**	**Thursday, December 11, 3 PM-4:50 PM in PHY 76. The final begins and ends promptly.** Read the Syllabus Section Titled: "Final Exam" for a description of the exam and what students are allowed on the exam. Leave cell phones, music players and hats in your car. *Grades will be emailed to students after posting to Web Advisor by Saturday Afternoon, 12/13*

Reading Quizzes: The Tuesday reading quiz questions are primarily conceptual. Some students will find it helpful to think through the end of chapter review problems for the current weeks lecture before taking the quizzes each Tuesday. **Students are responsible for reading the chapter before lecture on the topic.**

Homework is due the Tuesday following completion of lecture on the assigned sections. Students are never responsible for homework associated with text sections that have not been addressed in class.

Week	Date	Ch. & Sec.	**Homework Assignment:** (Due the Tuesday of the week following its assignment)
1	**8/12**	**1.6-1.8**	**3rd Edition: 1:** 20, 27, 28, 30, 32, 52, 56, 68, 70, 83, 85, 90, 97a, 102, 130 (Hint: d_{Al} is 2.70 g/cm^3)
	8/14	**1.1-1.6**	**3rd Edition: 1:** 5, 6, 9, 10, 11, 12, 13, 16, 21, 25, 34, 38, 42, 44, 46, 105, 109, 114, 140 (Hint: Two equations and two unknowns).
2	**8/19**	**2.1-2.5**	**3rd Edition: 2:** 3, 4, 6, 8,11, 14, 15, 30, 40, 41, 42, 43, 44, [48 (and why are they false?)], 95, 97, 130
	8/21	**2.6-2.8**	**3rd Edition:** 2: 17, 19, 21, 22, 23, 34, 52, 54, 62, 63, 64, 68, 71, 72, 78, 104, 106, 119, 126
3	**8/26**	**3.1-3.6**	**3rd Edition: 3:** 4, 5, 7, 8, 9, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 52, 54
	8/28	**2.9 & 3.7-3.11**	**3rd Edition: Ch. 2:** 24, 27, 81, 82, 83, 84, 86. Ch. **3:** 60, 64, 68, 71, 82, 83, 86, 83, 94, 106, 109, 110, 125. Note: Tro introduces the mole concept in Ch. 2 Sec. 9
4	**9/2**	**3.9 & 4.1-4.3**	**3rd Edition: Ch. 3:** 95, 96, 98. (Combustion Analysis) **Ch. 4:** 1, 2, 26, 28, 30, 34a,c, 36, 46, 48, 52, 125, 126 Note: Combustion Analysis is treated as a separate subsection.
	9/4	**4.4**	**3rd Edition: 4:** 5, 54, 55, 56, 57, 58, 60, 62, 64, 66, 69, 118 Please turn in a copy of your equation card with your homework for this section.
5	**9/9**	**4.5-4.8**	**3rd Edition: 4:** 6, 7, 8, 11, 12, 17, 71, 74, 75, 76, 78, 79, 80, 85, 90
	9/11	**4.9 and 18.2**	**3rd Edition: 4: 19, 20, 22, 23, 91, 92, 94, 96, 132**

Fall-2014 Lecture and Lab Schedule **Chemistry 1A** **Culp**

Week	Date	Ch. & Sec.	**Homework Assignment:** (Due the Tuesday of the week following its assignment)
6	9/16	5.1-5.4	**3rd Edition: 5:** 4, 6, 19 (presented in lecture), 26, 28, 32, 34, 38, 40, 42.
	9/18	5.5, 5.7-5.8	**3rd Edition: 5:** 11, 12 (This was done in lec.) 13, 14, 44, 48, 54, 56, 58, 62, 72, 77, 81, 107, 143
7	9/23	5.6, 5.8-5.10	**3rd Edition: 5: 20,** 21, 23, 24, 62, 65, 68, 79, 84, 86, 89, 93, 94.
	9/25	5.1-10	**3rd Edition: 5:** 36, 45, 52, 60, 69, 70, 80, 88, 91, 92, 102, 108, 130
8	9/30	6.1-3	**3rd Edition: 6:** 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 17, 18, 34, [37 (explain false responses)], 39, 40, 41, 42, 43, 44, 49, 51, 54.
	10/2	6.4-5	**3rd Edition: 6:** 15, 19, 20, 22, 24, 46, 48, 52, 54. 66, 68. 71, 73.
9	10/7	6.6-6.7	**3rd Edition: 6:** 20, 22, 55, 56, 60, 63, 71, 72, 75, 76.
	10/9	6.8-6.10	**3rd Edition: 6:** 25, 26, 27, 28, 29, 78, 80, 84, 87, 91, 92, 110, 112 (use data in problem), 127.
10	10/14	7.1-7.4 Exam 2 No Reading Quiz on 10/14	**3rd Edition: 7:** 2, 3, 4, 6, 7, 8, 11, 12, 13, 14, 15, 16, 20, 21, 22, 35, 37, 38, 39a, 40a, [42 (100.2 MHz photon only)], 43, 50, 52, 56, 65, 71.
	10/16	7.5-7.6	**3rd Edition: 7:** 26, 27, 28, 29, 30, 32, 58, 60, 61, 69
11	10/21	7.1-7.6	**3rd Edition: 7:** 34, 45, 46, 54, 62, 72, 73, 74, 75
	10/23	8.2-8.3	**3rd Edition: 8:** 1, 6, 8, 9, 10, 11, 7, 12, 14, 42, 43, 44, 46, 47.
12	10/28	8.4-8.9	**3rd Edition: 8:** 16, 19, 20, 22(don't follow the aufbau fill order), 25, 26, 27, 30, 32, 33, 34, 37, 51, 53, 54, 56, 62, 66, 69, 73, 86, 88, 100.
	10/30	9.1-9.5	**3rd Edition: 9:** 3, 4, 5, 6, 9, 10, 11(Take the time to do this, it will help you make sense of the calculations you will do later.),12, 14, 35, 38, 40, 43, 44, 47, 48,
13	11/4	9.5-9.11	**3rd Edition: 9:** 15, 16, 18, 19, 20, 21, 22, 26, 28, 29, 30, 31, 33, 49, 51, 54, 55, 56, 64, 66, 67, 74, 76, 80, 82, 84, 115.
	11/6	------	Exam 3 Today in Lecture No Home Work
14	11/11	Holiday	Holiday Today No Home Work
	11/13	10.2-10.5	**3rd Edition: 10:** 2, 3, 4, 5, 31, 32, 33, 34, 36, 37, 40, 42, 44, 46.
15	11/18	10.6-10.8	**3rd Edition: 10:** 7, 8, 11, 13, 14, 16, 19, 20, 22, 27, 48, 50, 52, 54, 56, 57, 58, 59, 63, 64
	11/20	11.2-11.3	**3rd Edition: 11:** 4, 5, 9, 10, 11, 12, 13, 14, 49, 50, 52c, 54, 58, 60.
16	11/25	11.4-11.5	**3rd Edition: 11:** 15, 16, 17, 19, 24, 25, 26, 61, 65, 67, 68, 70, 77.
	11/27	Holiday	Holiday Today No Home Work
17	12/2	11.6-11.8, 11.11-11.12	**3rd Edition: 11:** 28, 29, 31, 33, 34, 38, 40, 80, 83, 86, 88, 105, 106, 107 **This wome work Set is not Collected**
	12/4		Class Final Exam Review Today in Lecture No Home Work **No Homework will be graded after 12/5, pickup your work if you want it. Papers that are not picked up are shredded on 12/11.**

EXPERIMENT 0

First and Last Name (print) _____ Semester: Fall-2014

Course Number: **Chem 1A** Lab Instructor Name (print) **R. CULP** Section Number: _____

Safety in Laboratory Courses

To the student: You are required to read, understand and implement the safety precautions indicated in your laboratory manual or laboratory handouts, which are summarized below. Your signature on the attached sheet indicates your absolute willingness to abide by these precautions while you are in the laboratory.

1. Work in the laboratory only as authorized by your instructor. Do not perform unauthorized experiments.
2. You are required to purchase safety goggles and wear them as directed during laboratory sessions.
3. Learn emergency procedures and know the locations of the nearest eye wash, safety shower, fire extinguisher, fire blanket, fire alarms and chemical cleanup materials.
4. If you are injured or if any type of accident or fire occurs, IMMEDIATELY call your instructor for assistance.
5. Carefully read all instructions and thoroughly plan your work.
6. Wear appropriate clothing and shoes, not sandals, in the lab. Confine long hair.
7. Carefully read all labels on chemical bottles and familiarize yourself with the number/color hazards codes. More information is available on MSDS forms upon request.
8. Do not eat, drink or smoke in the lab. Never taste chemicals. Smell chemicals cautiously by wafting the vapors toward you. Be sure to wash your hands before you handle food, gum, cigarettes, etc., after you leave the laboratory.
9. When mixing or heating chemicals in a test tube, point the test tube away from people.
10. Do not use bunsen burners or other sources of spark or flame in the vicinity of flammable liquids. Note that most organic solvents are flammable.
12. While mixing acid and water, always add the acid to the water, not vice-versa.
13. Fill a pipet by using a pipet bulb or mechanical pipettor only; never pipet by mouth.
14. If a spill occurs refer it to your instructor or other trained person immediately. If no senior person (faculty member, Dean, ect.) is available, leave the area immediately and call the police.
15. Dispose of chemicals as directed by your instructor and in a manner consistent with federal, state and local hazardous waste disposal regulations. Organic solvents are **never** to be disposed of down the sink; receptacles will be provided as needed for their collection. If a container is not present, not labeled, or full tell your instructor immediately.
16. Do not touch hot glassware or hot hardware. Hot glassware and cold glassware look alike.
17. Never return excess chemicals to the stock bottles. Do not put a pipet or a dropper directly into a commercial stock reagent bottle. Instead, pour an aliquot of the reagent from the stock bottle into a beaker. Use premixed lab reagents as directed in the instructions for specific laboratory exercises. Do not insert anything, including a "clean spatula or dropper" in a class reagent bottle, or return excess material to a class reagent bottle. If a stopper or solid reagent seems stuck in a bottle, see the instructor for help.
18. Use great care in inserting glass tubing into rubber stoppers. Lubricate with glycerol/glycerin or water. Keep your hands on a straight piece of the glass, close to the stopper, but keep your hands and the glass well away from your body.

I have read carefully and understand all of the safety rules contained on this sheet. I also agree to read all rules for specific exercises contained in the laboratory manual or laboratory handouts required for this course. I recognize that it is my responsibility to obey them faithfully.

I realize that all chemicals are potentially dangerous; therefore I will exercise care in handling them. If I am unsure of the potential hazards of any chemical, I will discuss this with my instructor prior to using the chemical in question.

I understand that I am required to wear safety goggles at all times when directed to do so in the laboratory. I also understand that there are dangers involved in wearing all types of contact lenses in laboratory situations where reactive chemical agents, biological fixatives, or volatile organics are in use. If I do elect to wear contact lenses in the laboratory, I will inform my instructor **and** I will assume all responsibility for damages caused by wearing them in the lab.

If I have a medical condition such as, but not limited to, hypo- or hyperglycemia, diabetes, epilepsy, pregnancy, heart ailments, or **any other medical condition** which may cause sudden loss of consciousness, I certify that I am under a doctor's care and that my doctor has given me explicit permission to participate in this laboratory course. It is the student's responsibility to inform the instructor if any such condition exists.

I FURTHER UNDERSTAND THAT I AM NOT PERMITTED TO WORK IN THE LABORATORY WITHOUT THE SUPERVISION OF A LABORATORY INSTRUCTOR. **THERE ARE NO EXCEPTIONS FOR ENROLLED LABORATORY STUDENTS.**