Chemistry 1A

Course Syllabus
S2013

Dr. Mack

"When it comes to success, there are no shortcuts."

Bo Bennett
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# COURSE INFORMATION

**Lecture Instructor:** Dr. Jeffrey A. Mack  
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**Office:** SQU 314  
**Phone:** (916) 278-7094  
**Office Hours:** TBA (see SacCt website)  
**Course Webpage:** [http://www.csus.edu/indiv/m/mackj/chem1a/](http://www.csus.edu/indiv/m/mackj/chem1a/)

## LECTURE DISCUSSION AND LAB MEETING TIMES

Lecture, Discussion and Lab sections MAY NOT be substituted for one another in order to accommodate individual schedule needs. Discussion/Lab sections are paired and cannot be broken up. Discussion/Lab sections 2 – 13 are associated with Lecture section 1, Discussion/Lab sections 15 – 26 are associated with Lecture section 14. Discussion/Lab sections 28 – 31 are associated with Lecture section 27. No crossing between these assignments is permitted.

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<table>
<thead>
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<tr>
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<td>Laboratory</td>
<td>W</td>
<td>SQU416</td>
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</table>

**STUDENTS THAT FAIL TO PASS THE DIAGNOSTIC PRIOR TO THE BEGINNING OF CLASSES WILL BE ADMINISTRATIVELY DROPPED.**
REQUIRED TEXT PACKAGE AND MATERIALS

Lecture: Chem. 1A will be using "Chemistry a Molecular Approach", 2nd ed. by Nivaldo J. Tro
The text has been broken into two parts available at the CSUS bookstore:


If you are planning to take both 1A & 1B, you can purchase the text in its entirety.
(ISBN 0–321–65178–2)

http://www.mypersonalstore.com/bookstore/product.asp?isbn=0321651782&rll=1

The selected solution manuals and study guide are optional.

Scantron forms 882–E (3 for the lecture exams)
Scantron forms 815–E (7 for the lecture quizzes)

Homework: Chem. 1A will be using "Mastering Chemistry" for the Tro text, please see the section on homework for more details.
http://www.csus.edu/indiv/m/mackj/chem1a/docs/MasteringChemistry.pdf

Lab: Chemistry department approved safety goggles and a scientific calculator
All of the course experiments can be downloaded from the course SacCt website.
I suggest you obtain a 3–ring binder to keep track of all of your lab write ups.

Discussion: Scientific calculator and a notebook to work in. There will be discussing topic notes that you must download from the course SacCt website each week

PREREQUISITES

MATH: 1. Have passed MATH 11\(^1\) so that they are ready for the next level math class.
2. or have taken and passed or be concurrently enrolled in a math class ABOVE MATH 11.
3. or have a IAD (Intermediate Math Diagnostic Test) or Calculus Readiness Test score of 27.\(^2\)

Students without the prerequisite math skills will be administratively dropped from the course. Bring a copy of your transcripts, class schedule or IAD score to verify your eligibility on the first day of Discussion.

Confirming Math Prerequisites:
Students may show transcripts or their IAD Score. If they show the IAD score, it must be 27 or greater.
Student transcripts or class schedules must show the following:
- A passing score of C or better in math 11.
- Any math course where math 11 is a prerequisite such as math 26A/B, math 29 or higher.
- Stats 1 & 50 DOES meet the requirement if taken at CSUS only.

Math 17 DOES NOT meet the requirements as math 9 is prerequisite.
Math 24 DOES NOT meet the requirements as math 9 is prerequisite.

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\(^1\) Enrollment in math 11 does not qualify as meeting the prerequisite.

\(^2\) For information about the IAD please see: http://www.csus.edu/math/courses/diagnostic.htm
CHEMISTRY PREREQUISITES:
High School chemistry or the college equivalent or a grade of “C” or better in chem. 4. Students are required to have a working knowledge of chemical nomenclature as well as an understanding of basic chemical concepts. In addition to the course prerequisites, all students are required\(^1\) to pass the diagnostic qualifying exam administered at the first meeting of each discussion section. One must achieve at least a minimum score of 35 out of 60 questions (58\%) of this exam in order to enroll in Chemistry 1A. The exam covers algebra and simple mathematics and basic chemistry (consistent with high school chemistry or a preparatory college chemistry class). If you have never taken a chemistry course and you score low on the diagnostic placement exam, it is suggested that you enroll in chem. 4 or a preparatory chemistry course at a local community college.

Chemistry 1A Diagnostic Examination Information

The CSUS Department of Chemistry uses a National Standardized Chemistry Placement Examination to evaluate a prospective student’s potential for success in a university level first semester general chemistry course.

The 55 minute test consists of 60 multiple-choice questions covering the following general topics:

<table>
<thead>
<tr>
<th>Compounds/Elements</th>
<th>States of Matter</th>
<th>Laboratory Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactions of Matter</td>
<td>Structure of Matter</td>
<td>Mathematics</td>
</tr>
<tr>
<td>Periodic Properties</td>
<td>Solutions: Titrations</td>
<td>Chemical Dynamics</td>
</tr>
<tr>
<td>Equilibrium</td>
<td>Stoichiometry</td>
<td></td>
</tr>
</tbody>
</table>

The test: The questions are based on content covered in a college preparatory high school chemistry course. Mathematical questions cover ratios, percentages, simple algebraic equations, geometric relationships and interpretation of graphs. The math questions are at the course prerequisite level of high school algebra I and II. Test questions have been checked for statistical and course grade validity.

Preparation: To prepare for the test, the department suggests a review the general chemistry topics listed above using a high school or college general chemistry text. The CSUS library contains numerous chemistry texts in the stacks; the Science librarian can help you locate these if you are new to this campus.

Scoring: A minimum score of 35 out of 60 (58 \%) or better is required to enroll in chem. 1A.\(^2\) A score of 35 indicates that a student statistically possesses the minimum skills needed to earn a grade of C– in a university level general chemistry course.

Test Times: The diagnostic test is administered prior to each semester during the semester breaks and during finals week at the end of each semester.\(^3\) The test WILL NOT be offered once classes have begun and enrolled student without a passing score will be administratively dropped once classes begin. Please be sure to bring a scientific calculator and pencil to the exam. Students must also have their Sac State SID. Scores will be posted on the chem. 1A website by date and random ID.

Chem. 4: Students that do not achieve a minimum score are recommended to enroll Chemistry 4, “Chemical Calculations”. Chem. 4 is a three unit preparatory course designed to help students develop the needed skills for success in Chemistry 1A.

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\(^1\) Students with a C or better in chem. 4 are required to take the exam, however the outcome will have no effect on enrollment.

\(^2\) Students with a score below 35 that have passed chem. 4 with a “C” or better may enter chem. 1A. CSUS does not accept transfer or equivalent scores for chem. 4 as it is a remedial course.

\(^3\) Contact the Chemistry department for location and times.
INTRODUCTION
You have chosen to take this course as part of your chosen major. Whether you want to be an engineer, doctor, biologist or chemist, the skills you will develop in this course will help you to become a better student in subsequent classes. We hope that you will see that studying chemistry trains you to learn more effectively as you develop more sophisticated critical thinking and problem solving skills. The following material in this course syllabus is a very important compilation of the course requirements, policies, scheduling, point breakdown, resources, and other useful information. Please read it carefully and keep it in a convenient location for easy reference. Once again always keep in mind that you have chosen to enroll in this course and it is up to you to make the most of your experience. How you perform in this course is directly related to your real effort put forth and your motivation to succeed.

MATH AND CHEMISTRY
"In physical science the first essential step in the direction of learning any subject is to find principles of numerical reckoning and practicable methods for measuring some quality connected with it. I often say that when you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meager and unsatisfactory kind; it may be the beginning of knowledge, but you have scarcely in your thoughts advanced to the state of Science, whatever the matter may be."

Lord Kelvin

In other words, this course uses numbers, equations, word problems and mathematics extensively. Get used to that and get over any math phobias you may have. Some of you will have an easy time with this course and some will have to work harder than heck just to get by. Get over that too. You will need to do as much homework and studying as needed to master the material. Chemistry can't be learned by watching others, one must put in as much time as needed to master the concepts and techniques to problem solving. Just look at the word "chemistry"... it says... "Chem is Try"!

LEARNING OBJECTIVES
In order to satisfactorily complete the course, students are required to have mastered the basic understanding and application of the following chemistry topics:

- Molecular and chemical nomenclature
- Identification and writing of basic chemical reactions
- Dimensional Analysis and Significant figure calculations
- Atomic and molecular structure
- Basic chemical calculations involving quantitative measures
- Behavior of gasses, liquids, and solids
- Basic energetic and kinetic properties of chemical systems
- The development of analytical and problem solving skills that are prerequisite for future chemistry courses.

One cannot succeed in this course on memorization alone. You will need to practice extensively as no two problems are exactly the same. You must learn to learn from your mistakes and seek out help when you get stuck. You must make a commitment to studying and spread that studying out over each day of the week. Think about it, would you save up a weeks worth of food and eat it all on Sunday evening? That is impossible to do! Those that keep up with the assigned reading and work, generally do well in the course while those that procrastinate generally do poorly as they find themselves falling behind to the point where it is impossible to catch up. You will find that the material in this course builds upon itself such that what you learn from one chapter will be the foundation for another.
PHYSICAL REQUIREMENTS AND CHALLENGES TO THE COURSE

Attendance
Students enrolling in this course will need to attend lecture and lab and discussion with a minimum of absences. Although attendance in lecture is not mandatory, data shows that there is a very strong correlation between a lack of lecture attendance and performance in the course. The pace of this course is very fast. Once behind, it is very difficult to catch up since the material builds upon itself. Please be forewarned that merely attending lecture and copying the instructor’s notes does not guarantee success! You also must keep up with the reading and do as many homework problems (and extra) until you feel comfortable with the material. The lecture period is designed to emphasize that material which is most important. The lecture is presented to help facilitate the learning of the course material; it is your responsibility to master the necessary skills to solve the problems on exams and quizzes.

Time
If you are taking a full load of classes, working and you like to have a lot of "free time", you will inevitably encounter some form of “time crunch” that will significantly affect your performance in this course. To perform well in this course, you will need to evaluate your priorities to ensure that you have enough time to study, complete homework and write up labs. If your priorities are yakking & texting on the cell phone, computer games, online social networking and partying with your friends, then your grade in this course will be adversely affected. Your time is governed by the “Reality Triangle”:

The triangle governs the totality of your time commitments. You must choose only two sides. This means that if you work a significant number of hours and go to school full time and you wish to do well at both, you won’t have much of a social life. If you work and like to go out and play, then your academic success may be jeopardized and so on...

Try as you might, you can’t beat the triangle!

AT RISK STUDENTS
A national comprehensive review of general chemistry students revealed several risk factors common to students that underperformed in chem. 1A over the years:

- A diagnostic placement score of less than 40
- Repeating chem. 1A
- Repeated chem. 4
- Weak math preparation (not in pre–calc yet)
- A heavy work load (>20 hrs/week) in additions to your course work.

If you fall under one of these categories, you might consider enrolling into a supplemental adjunct course that will help you with study and time management skills that increase your chance of success in this course. Log into MySacState and look up the course times for NSM 12C - Peer-Assist Learning CHEM 1A. You will need to attend the course itself to enroll. Just show up during the 1st two weeks, first come first serve. There are certain requirements that you must commit to in order to receive credit for the course. This will be discussed in the first meeting of the course.
NOTE ON WRITING COMPONENTS

The ability to communicate effectively in writing is as important in chemistry as it is in your non-science classes. We expect that the written portions of your assignments, quizzes, homework, and exam questions will demonstrate college level writing technique and style. In other words, nouns, verbs, correct terminology and proper punctuation! If we can’t read it, we won’t grade it. Poorly written assignments will be penalized accordingly.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Reasonable accommodations including auxiliary aids and all course documents will be provided to students with disabilities when necessary to ensure that they are not denied the benefits of, excluded from participation in, or otherwise subjected to discrimination in any academic program. The University’s goal is to provide an equivalent academic experience and learning opportunity, not to guarantee the outcome of the student’s educational endeavor. Students with special needs must personally contact faculty directly regarding the approved accommodation(s) and provide instructors with SSWD’s written verification within the first two weeks of classes or as soon as feasible for students who are certified within the semester. No special accommodations can be provided until such documentation is complete and there shall be no retroactive application if the documentation is provided later in the semester. Students must submit requests for use of the testing center facility no later than one week prior to the exam of final. Since the resources for testing center facilities are limited, students should schedule all test dates as soon as possible and return the list of dates to Dr. Mack. Students that wish to take the weekly lab quizzes should also include these dates in the list. I will make sure that the test and quiz materials are at the test center prior to the test dates.

ADDITIONAL CHEM. 1A

Enrolled students must take and pass the chem. 1A diagnostic placement exam prior to the beginning of each term. The exam will not be offered once classes have begun. Those that fail to do so will be administratively dropped and replaced by students on the waitlists with passing scores. Those students that wish to add must be in attendance in the discussion section in which they are waitlisted during the first meeting. The chemistry department will keep track of all diagnostic scores. Please see the chem. 1A website for more information on the exam and the course policies. At the close of registration, the waitlists for the discussion/lab sections will be printed. Students will be added to the disc/lab/sec sections based on ones position in disc/lab section wait list if there is room on the first discussion meeting. One must be present to add.

DROPPING CHEM. 1A

The student ultimately has the responsibility of dropping courses. Students may drop courses on-line at MySacState during the first two weeks of the semester without penalty. Drops after the fourth week of the semester (census date) are called withdrawals. The approved Add/Drop/Withdraw petition must be submitted to the Registrar’s Office (Lassen Hall) after the fourth week.

- Students may withdraw from no more than 18 units in their undergraduate career, unless an exception is granted (any “W” grades received prior to the Fall 2010 semester do not count towards the 18 unit maximum).
- Withdrawals after the fourth week of the semester are granted only for “serious and compelling” reasons. (http://www.csus.edu/acad/faq/wd.html)
- Withdrawal during the 5th and 6th week of the semester requires the signature of the course instructor and the department chair. Reasons for dropping in during this period include medical, carrying an excessive course load, student’s inadequate academic preparation for the course, or the student having significant job or career changes.
• Withdrawal during the 7th through the 12th week requires the signature of the course instructor, the department chair, and the college dean. Reasons for withdrawal during this period include only medical or work related reasons clearly beyond the control of the student; a student initiated job change, carrying an excessive course load or inadequate preparation does not qualify.

• Withdrawal is allowed after the 12th week of instruction only in exceptional cases, such as in cases of accident or serious illness where the cause is due to circumstances beyond the student’s control. All signatures are required and the student must meet with an Academic Advisor in the Academic Advising Center.

• Withdrawals approved during the last three weeks of the semester will not count towards the 18 unit maximum; however, a grade of “W” is still recorded on the transcript. Students will receive a final grade of “WU” or “F” in course(s) they fail to officially drop by the prescribed dead lines. “WU” grades will not be assigned to students who attend through the second exam. No drops are allowed after the last day of instruction. A grade of incomplete, “I” can only be assigned to students that have a passing grade and have completed at a minimum of ¾ of the course.

• Students who fail to check-out of their assigned locker will have a hold placed on their records in addition to being assessed a check-out fee. You will not be allowed to enroll in subsequent semesters until the fee is paid.

Please refer to CSUS WebPages and catalog for deadline dates, procedures and policies. Instructors have the authority to administratively remove any student who, during the first two weeks of instruction, fails to attend any two class meetings (for courses that meet two or more times a week) or one class meeting (for courses that meet once a week).

GRADING
Your final grade is based on the class distribution of the following points. Grades are not open to negotiation. How you are graded elsewhere has no bearing on how you are grade in chem. 1A.

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<td>Quizzes:</td>
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<td>(10 × 10 points)</td>
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<td>Lecture Quizzes:</td>
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<td>(5 × 5 points)</td>
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<td>Final exam:</td>
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<td>Lab Final:</td>
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<td>Discussion:</td>
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<td>(your % × 50 points)</td>
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<tr>
<td>Lab Experiments:</td>
<td>175</td>
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<td>(your % × 175 points)</td>
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</table>

Total: 1000 points

Please note that homework and lab points are scaled to a total; these “points” are not equivalent to an exam, quiz or final points. Note also that the majority of your grade is determined by exams, quizzes and the final.

---

1 The lowest 2 quiz scores will be dropped at the end of the semester.
2 The lowest 2 quiz scores will be dropped at the end of the semester.
3 To pass the course you must take the final exam.
4 To pass the course you must take the lab final exam.
5 You will be given a “practice proficiency quiz” in week 2.
6 Please see the Homework policy on extra credit.
7 See the section on discussion for details
8 All labs must be completed and submitted in order to pass the course. (See lab policy)
GRADE DEFINITIONS

A: Exemplary achievement of the course objectives. In addition to being clearly and significantly above the requirements, work exhibited is of an independent, creative, contributory nature.

B: Superior achievement of the course objectives. The performance is clearly and significantly above the satisfactory fulfillment of course requirements.

C: Satisfactory achievement of the course objectives. The student is now prepared for advanced work or study. Note: The letter grade “C” does not imply satisfactory achievement at the graduate level. (Students are required to earn a grade of “C” or better to move on to chem. 1B)

D: Unsatisfactory achievement of course objectives, yet achievement of a sufficient proportion of the objectives so that it is not necessary to repeat the course unless required doing so by the academic department.

F: Unsatisfactory achievement of course objectives to an extent that the student must repeat the course to receive credit.

WU: Withdrawal Unauthorized indicates that the student did not withdraw from the course and failed to complete course requirements. It is used when, in the opinion of the instructor, completed assignments or course activities or both were insufficient to make normal evaluation of academic performance possible. For purposes of grade point average, this symbol is equivalent to an “F”. Grades of “WU” will NOT be assigned to any student that has taken the second exam.

Please review the University’s Academic Policies for further information.

http://catalog.csus.edu/current/first%20100%20pages/academicpolicies.html

Your lab instructor will keep a spreadsheet with your scores and overall percent of points in the course, you need to keep track of all returned papers. A three ring binder will work well for this.

Your grade is solely determined by your overall percentage of points earned over the course of the semester. Grades cannot be determined by effort or intent. The majority of your grade is dependant upon your performance on the exams, quizzes and final. You can’t rely on homework and the lab to pass the course as the majority of the course points come from exams and quizzes. There will be NO EXTRA CREDIT assigned in this course other than exam and quiz bonus questions and homework tutorials¹. Deadlines for assignments will be strictly enforced. No late assignments will be accepted with out the lecture instructors consent. Incomplete grades or WU's are assigned only where merited by the university and chemistry department policies.

GRADES ARE NOT OPEN TO NEGOCIATION

GRADING SCALE

<table>
<thead>
<tr>
<th>Grade</th>
<th>90.0 to 100%</th>
<th>80.0 to 89.9%</th>
<th>70.0 to 79.9%</th>
<th>50.0 to 69.9%</th>
<th>&lt; 50 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale</td>
<td>A- to A</td>
<td>B- to B+</td>
<td>C- to C+</td>
<td>D- to D+</td>
<td>F</td>
</tr>
</tbody>
</table>

¹ Please refer to the homework section in this syllabus.
GRADING AND PARTIAL CREDIT

Since chemistry is an exact science, most of your answers will either be correct or incorrect. When worked problems are given (Labs included) all steps shown must lead to the answer given. Partial credit may be awarded when the method presented is correct, but there is a minor error in the calculation. No credit shall be given for attempts that clearly show an incorrect method was applied. In other words, just because you gave an answer does not mean it merits credit. Be aware that re–grading of material and partial credit are severely limited in this course.

CHEATING AND PLAGIARISM: All graded work (including quizzes, exams, homework, and lab reports) must be your own. Students found copying or assisting other students in copying any graded class assignments will be dealt with according to the University statement on Academic honesty:  
http://www.csus.edu/umanual/AcademicHonestyPolicyandProcedures.htm

A student tutorial on plagiarism is also available

http://library.csus.edu/content2.asp?pageID=353

LECTURE POLICY

NOTE TAKING

The lecture portion of the course is intended to be a secondary presentation of the material that you are responsible for mastering. You need to have at a minimum read through the sections of the text that correspond to the lecture material prior to class in order to maximize the lecture learning experience. Ideally, you will have started working on your homework as well. The lectures for this course will be presented using PowerPoint. I WILL NOT post the notes prior to class as I want to engage you during lecture, a task that is not effectively achieved if you are staring at a piece of paper. The lecture notes will be posted by the end of the day on my SacCt website in .pdf format for your review.

LECTURE QUIZZES (NEW!)

Over the course of the semester there will be seven (7) five point lecture quizzes randomly administered about every two weeks. Sometimes the quizzes will be offered at the beginning of class, sometime during and sometimes at the end of class. Two (2) of these quizzes will be dropped at the end of the semester. If you are absent on the day of a quiz, then that will count as dropped quiz. You are required to have a scantron form 815–E, a pencil and your calculator with you in order to take the quiz, your instructor will not extra forms or calculators available. The quiz questions (typically 2 or 3 of them) will come from your text reading, HW or lab for that week. There may be a week where two quizzes are offered.

HOMEWORK

Homework will be assigned and recorded using the Mastering Chemistry component of your text package. When you purchase the text package, you will find information and a login password that will direct you to the Mastering Chemistry website. DO NOT LOSE THIS INFOMATION! If you purchase the text elsewhere, I will have links to the Mastering Chemistry website on my chem. 1A homepage.  
MASTERING CHEMISTRY website: http://www.masteringchemistry.com/

Homework assignments will correspond to the lecture timeline. Most often I will have covered the material in lecture already. All assignments have fixed deadlines, if you put off working the problems until the last minute you will likely not finish in time and you will receive only partial credit. Homework due dates and times will vary throughout the week so you will need to log in often to check for new assignments. Don’t wait until the last minute to start working… you will never finish! From time to time I will assign additional
homework via the Mastering Chemistry system in the form of pre-lecture tutorials and post-lecture problems as extra credit. There will be limited window of time to complete these, so you need to check the Mastering Chemistry site often to see when they pop up. Credit for these problems will apply to your homework percentage up to a maximum of 100% of, but not above the total (50 points). No late homework will be accepted and you may not turn in your work on paper. Please direct any issues with the Mastering Chemistry system to the Mastering Chemistry help desk as I do not manage the system. The Mastering Chemistry system is easy to work especially after you go through the required tutorials. **IF YOU CAN MAKE FACEBOOK WORK AND UPLOAD APPS TO YOUR CELL PHONE, THEN YOU CAN MAKE MASTERING CHEMISTRY WORK JUST FINE!**

Mastering Chemistry will keep track of your scores, it is up to you to keep up with the assignments. At the end of the semester, I will apply the your total percentage of correct answers to 50 points and add this into your overall total. **HOMEWORK SCORES ARE NOT OPEN TO NEGOTIATION. DO NOT ASK ME TO EXTEND DEADLINES IN THE LAST WEEK OF CLASSES.**

Please go to the homework webpage for information on enrolment.

http://www.csus.edu/indiv/m/mackj/chem1a/HW.html

- There will be no whining or excuses for not doing your homework.
- If you procrastinate and fail to do the work on time or you don't make arrangements to access the internet, there will be no extensions of due dates.
- If you are playing games or social networking while logged into Mastering Chemistry, your may find that Mastering Chemistry "times out". If this happens, you will lose credit for the work you did not finish.
- If you miss an assignment, you are free to work the problems beyond the due date, however you will receive no credit towards your score.
- By signing up for this course, you have agreed to the policies and requirements set forth in the syllabus. Keep in mind, you do homework to learn, the points are incidental.

Always keep in mind:  "THE DUE DATE IS NOT THE START DATE!"

**DISCUSSION**
Each week you will attend one–hour discussion section. **ATTENDANCE IS MANDATORY!**

The discussion sections will consist of problem solving sessions, worksheets that must be downloaded by you prior to class. **YOUR INSTRUCTOR WILL NOT HAVE COPIES!** Failure to bring these materials will affect your attendance points (see below). The material presented in discussion will cover topics and concepts from the previous week's lecture and the current week's homework. The goals and outcome of these exercises will be to strengthen your critical thinking and problem solving skills in chemistry.

**ONLINE DISCUSSION ASSIGNMENTS**
After each discussion meeting there will be an online assignment on Mastering Chemistry that you will have 48 hours to complete. There will be no make up assignments. If you miss the assignment, you receive a zero. The assignments will show up on Mastering Chemistry on Wednesday morning at 6:00 am and close on Friday at 6:00 pm. At the end of the semester your earned percent of the assigned points for the assignments will be applied to 50 points and added into your overall point total.

Always keep in mind:  "THE DUE DATE IS NOT THE START DATE!"
DISCUSSION ATTENDANCE
If you miss two (2) or more days of discussion you will receive zero points for the required online work. Any absences must be accompanied by a documented reason. If you cannot attend a discussion meeting due to a prior commitment, you may attend another section with Dr. Mack's approval prior to the meeting. If you have issues that prohibit attendance, please contact your instructor as soon as possible. YOU MAY NOT HOP FROM SECTION TO SECTION EACH WEEK!

QUIZZES
Multiple choice and short answer quizzes over the lecture and laboratory material will be given weekly at the beginning of Discussion or Lab. (see the schedule) Each quiz is worth 10 points. It will cover topics from the previous week's lecture, discussion and current lab material. There will also be a 1 or 2 point bonus question on each quiz! If you are late and miss the quiz, you may not make it up.

EXAM POLICY
There will be three exams given (one approximately every four weeks). The exams will be based on concepts covered in the text, lecture and lab with problems that follow the HW, lecture examples and lab calculations. There will be sample problems on the SacCt website to help you prepare for each exam.

No make up exams will be offered. You are more than welcome to take an exam early if need be depending on the circumstances. Any missed exam due to a valid incident or documented sickness will be dealt with on a case-by-case basis. You need to contact me as soon as possible regarding an exam absence. Without verification, you will receive a zero on the exam. Documentation includes: Signed letters from a physician on letterhead, police reports etc... In the case where an exam is missed, it will be deducted from your overall total. (This however puts more weight on the rest of your work).

No Note cards will be allowed. All of the exams and quizzes are closed book. You will need to bring a calculator and pencil (which I prefer) to each exam. Scratch paper, scientific constants and periodic tables will be provided. You will need to memorize all basic equations; I will provide you with complicated or unusual equations.

PROFICIENCY EXAM
A 50 point proficiency exam covering nomenclature, dimensional analysis and net ionic equations will be administered in lab during the 3rd week (see lab schedule). There will be a "practice" proficiency exam in week 2 that will NOT count towards your score. We believe that mastery of these topics is essential for successful continuation in the course. It is up to you to study and do well on this exam! If you do not pass the exam, you should consider dropping the course before the first exam. I have data that correlates the score of your proficiency exam and the first exam. I also know that if you do poorly on the first exam, you will likely not do well overall in the course.

FINAL EXAM POLICY The final exam is multiple choice and comprehensive with a slight weight towards the latter material. All students must take the final in order to pass the course. No late or make up final exams shall be offered after finals week is over. FINAL EXAMS WILL NOT BE RETURNED. You may review them in my office by appointment.

LABORATORY
You will be required to download and print out laboratory materials throughout the semester from:

http://www.csus.edu/indiv/m/mackj/chem1A/labDisc/
CHEATING

It is your responsibility to have the appropriate printed materials when you come to lab. There are multiple computer laboratories on campus for your use. Prior to leaving you lab, you are required to obtain initials form you lab instructor on any data accumulate in that days experiment to verify your attendance.

LAB ATTENDANCE

Attendance in laboratory is mandatory. You must complete each lab activity and turn-in each laboratory write-up in order to pass the course. You are allowed one lab absence without documentation. (You must make the lab up; this is not a free day off!) After that, you need written verification to be excused from a missed lab. If you have an issue that prevents you from making it to lab, please contact your lab instructor if possible beforehand.

LAB ABSENCE

If you do miss lab, **it must be made up within one week, no later.** You must attend a laboratory section other than your own (with the instructor’s permission). The instructor of the laboratory in which you make up your lab must sign your data sheet. Any unexcused absences may not be made up. You will receive a zero for the missed experiment. You cannot hop from lab to lab because you overslept or you did not feel like going to lab on a given day. If you accumulate too many missed labs you will be given an “F” in the course.

PRE-LABORATORY ASSIGNMENTS

Most of the experiments have pre-lab assignments that must be completed before coming to lab to perform the associated experiment. Before attempting the pre-lab assignment, READ THE EXPERIMENT! Most of the answers are in the EXPERIMENT! The pre-lab assignment is due at the beginning of the lab period.

LAB SCORING

At the end of the semester, the sum of your lab points will be normalized to a total of 175 points (17.5% of your grade). For example, if you earned 85% of the assigned points, then 149 points would be added to your overall point total. Your lab grade will not carry you through this course. You need to at minimum average ~70% of the exam, quiz and final points to pass. Some of the exam materials will come directly from the lab calculations. It is in your best interest to know how to do these on your own. This cannot be accomplished of you copy another students work.

Laboratory reports are due at the beginning of the lab one week following the completion of the experiment. (Some experiments will be due at the end of the period) You have plenty of time to write up your lab, DO NOT PUT IT OFF!

Always keep in mind: **"THE DUE DATE IS NOT THE START DATE!"**

In order to pass the course, all labs must be submitted by the end of the semester. If a student fails to submit (completely and legitimately) even one lab, that student fails the course regardless of overall score.

Labs that are submitted incomplete will be retuned to the student immediately with an automatic 20% deduction of points (in addition to any subsequent deductions upon grading). The lab must be resubmitted by the next lab period in order to be eligible for grading. After such time, the lab must still be submitted; however it will be scored with a zero.

CHEATING IN LAB

Any students found using one another’s data, graphs or calculations will receive a score of zero for the lab for the first violation. (This includes all persons involved.) Subsequent violations will result in those involved
being remanded to student affairs for violation of CSUS academic honesty policies. The consequences can range from removal from the course to expulsion from the university. Students submitting made-up labs with no instructor signatures are considered to be in violation of the above policy.

LAB FINAL
In the last week of lab there will be a 50 point lab final that cover concepts and calculations emphasized throughout the lab. You can prepare for this by reviewing you returned labs. All students must take this exam in order to pass the course, EVEN IF YOU ARE SKIPPING THE LAB AS A REPEATING STUDENT.

STUDENT CIVILITY
Please remember treat your laboratory instructors and stockroom staff with the respect that you would give any professor. Remember, if you treat others with respect, then they in turn will treat you with respect.

EMAIL
If you wish to contact me or your discussion/Lab instructors you must do so through your saclink account. Emails from your non–CSUS accounts, phone or other portable devices will not be read. Any emails that are deemed to be inappropriate will be deleted without a response. Please state the nature of your email in the header line. Emails that are send after 5 pm or on weekends will not be responded to until the next school day.

IMPORTANT DATES
- Instruction Begins: January 28th
- Last day to drop via MySacState: February 8th
- Proficiency Exam (in lab) February 13th and 14th
- Last Day to drop w/o a "W" February 22nd (Friday of week 4)
- Exam 1: Week of February 18th (4th week)
- Exam 2: Week of March 18th (8th week)
- Spring recess March 25th – 29th (campus closed)
- Cesar Chavez Holiday April 1st
- Exam 3: Week of April 29th (week 13) (in the lab sections)
- Lab Finals: (last day of lab) May 15th & 16th
- Last Day of Instruction: May 17th
- Final Exams
  - Section 1: Wed. May 22nd (8–10am) MND 1005
  - Section 14: Wed. May 22nd (3:00 –5:00 pm) MND 1005
  - Section 27: Mon. May 20th (10:15am –12:15 pm) HMB 202

RESOURCES FOR HELP
Your professor and the lab instructors will hold office hours each week. Lab instructor office hours are held in Sequoia Hall, room 502. These office hours will be posted outside the HELP Office and on the web. You are welcome to go to ANY of the Chem. 1A TA office hours that fit your schedule. Try not to abuse the HELP office or the TA office hours. They are there to help you learn, not to write-up your lab reports or do your homework for you!

HINTS
Plan to spend at least 15-20 hours per week outside of class time for this course. Chemistry is a challenging subject that requires considerable time to master. Develop a study schedule and stick with it! Do as many problems as possible. Problem solving is one of the most effective ways to master this material. Read the assigned text section the instructor is going to cover each day before going to class. The lectures will be more beneficial if you have done a little preparation.
Review your lecture notes the evening after each lecture to make sure you understand the material presented. Do not wait until the last minute to do your homework or laboratory assignments. If you wait until the last minute, you will not have time to get help.

SAFETY
You will be given a safety presentation during the first week of lab. You will then sign a “contract” promising to abide by the safety rules of the laboratory. Failure to follow the safety rules will not be tolerated. (A copy of the safety policy is provided at the end of this syllabus)

SAFETY GOGGLES
Approved safety goggles are required. (consult your instructor if you have questions.) You will be required to wear approved safety goggles whenever glassware or reagents are out in the lab regardless of what you are doing. Safety glasses are not approved for student use. Repeated violations will result in dismissal from the course.

MATERIAL COVERED IN THE COURSE BY CHAPTER
Over the course of the semester we will cover chapters 1 – 13 of the text.

NOT ALL OF THE MATERIAL WILL BE COVERED IN LECTURE! SOME MATERIAL WILL COVERED IN LAB ONLY AND OTHER MATERIAL WILL BE COVERED IN YOUR READING AND HOMEWORK ONLY!

<table>
<thead>
<tr>
<th>Covered in Lecture</th>
<th>Read on your own</th>
<th>Covered in Lab</th>
<th>Skip</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ch. 3.1–4, 3.7–10</td>
<td>Ch. 3.4,5 &amp; 11</td>
<td>Ch. 3.7–10</td>
<td></td>
</tr>
<tr>
<td>Ch. 4</td>
<td></td>
<td>Ch. 3.4,5 &amp; 11</td>
<td></td>
</tr>
<tr>
<td>Ch. 5</td>
<td>Ch. 5.1, 11</td>
<td></td>
<td></td>
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<tr>
<td>Ch. 6</td>
<td>Ch. 6.10</td>
<td></td>
<td></td>
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<tr>
<td>Ch. 7</td>
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<td></td>
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<tr>
<td>Ch. 8</td>
<td>Ch. 8.1 &amp; 2</td>
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<tr>
<td>Ch. 9</td>
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<td></td>
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<td>Ch. 10</td>
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<td></td>
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<tr>
<td>Ch. 11</td>
<td></td>
<td>Ch. 11.10 – 13</td>
<td></td>
</tr>
<tr>
<td>Ch. 12</td>
<td>Ch. 12.6 –7</td>
<td>Ch. 12.8</td>
<td></td>
</tr>
<tr>
<td>Ch. 13</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Computer Lab Locations
- AIRC 2004 - This lab is located on the second floor of the Academic Information Resource Center.
- Library 2000 - This lab is located on the second floor of the Library.
- Mendocino 2004 / 2009 - These labs are located on the second floor of Mendocino Hall.
- Mendocino 2003 / 2007 - These labs are located on the second floor of Mendocino Hall.
- Solano 2001 / 2003 - These labs are located on the second floor of Solano Hall.

Help Desk Location: AIRC 2005
Computer Lab Locations: http://www.csus.edu/irt/Labs/Labs/Lab-Locations.html
Setting up a SacLink account: http://www.csus.edu/saclink/settingUp.stm
My website: http://www.csus.edu/indiv/m/mackj/chem1A/

*All experiments and discussion material must be downloaded & printed PRIOR TO CLASS. Your instructors WILL NOT have copies.
### LECTURE SCHEDULE

<table>
<thead>
<tr>
<th>Week</th>
<th>Week of</th>
<th>Topics Covered in Lecture</th>
<th>Text Chapters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior to class</td>
<td></td>
<td>Chapters 1, 2 &amp; 3 should be reviewed prior to class. Most of this material will not be covered in lecture.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Jan 28</td>
<td>Course Introduction Problem solving in Chemistry using Dimensional Analysis (Ch. 1.8) Atoms, Isotopes, Compounds &amp; the Mole (Ch.2)</td>
<td>1 &amp; 2</td>
</tr>
<tr>
<td>2</td>
<td>Feb 4</td>
<td>Chemical Bonds (Ch. 3.2) Chemical Formulas &amp; Molar Mass (Ch. 3.7) Chemical Formulas From Mass data, % Composition, Hydrated Salts &amp; &amp; Combustion Analysis (Ch. 3.9)</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Feb 11</td>
<td>Chemical Reactions (Ch. 3.10) Reaction Stoichiometry (Ch. 4.3) Solution Stoichiometry (Ch. 4.4) Solubility Rules and Types of Reactions in Solution: Net Ionic Equations (Ch. 4.5 – 4.8)</td>
<td>3 &amp; 4</td>
</tr>
<tr>
<td>4</td>
<td>Feb 18</td>
<td>Oxidation and Reduction Reactions (Ch. 4.9) Gas Laws &amp; the Ideal Gas Law (Ch. 5.2 – 5.5) <strong>Exam 1: Chapters 1 to 4</strong></td>
<td>4 &amp; 5</td>
</tr>
<tr>
<td>5</td>
<td>Feb 25</td>
<td>Mixtures of Gasses, Gas Stoichiometry &amp; Kinetic Molecular Theory (Ch. 5.6 – 5.9) Thermochemistry: Heat &amp; Work, the First Law (Ch. 6.2 – 6.5)</td>
<td>5 &amp; 6</td>
</tr>
<tr>
<td>6</td>
<td>Mar 4</td>
<td>Reaction Enthalpy (6.5)Coffee Cup Calorimetry (Ch. 6.7) Hess's Law (Ch. 6.8 &amp; 6.9)</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>Mar 11</td>
<td>Atomic Structure: Light (7.2) The Bohr Atom (7.3) Atomic Spectroscopy (7.4)</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>Mar 18</td>
<td>Quantum Mechanics &amp; the Atom (7.5) Atomic Orbitals (7.6) <strong>Exam 2: Chapters 5 to 8.5</strong></td>
<td>7 &amp; 8</td>
</tr>
<tr>
<td>9</td>
<td>Apr 1</td>
<td>Electron Configurations (Ch. 8.3 – 8.5) Periodic Trends (Ch. 8.6 – 8.8)</td>
<td>8</td>
</tr>
<tr>
<td>10</td>
<td>Apr 8</td>
<td>Chemical Bonding 1: Lewis Theory</td>
<td>9</td>
</tr>
<tr>
<td>11</td>
<td>Apr 15</td>
<td>Chemical Bonding 2: VSEPR Theory, Valence Bond</td>
<td>9, 10</td>
</tr>
<tr>
<td>12</td>
<td>Apr 22</td>
<td>Chemical Bonding 2: Molecular Orbital Theory</td>
<td>10</td>
</tr>
<tr>
<td>13</td>
<td>Apr 29</td>
<td>Intermolecular Forces and Properties of Liquids (Ch. 11.2 to 11.8) <strong>Exam 3: Chapters 8.6 to 11 (Wed/Thurs in lab sections)</strong></td>
<td>11</td>
</tr>
<tr>
<td>14</td>
<td>May 6</td>
<td>Chemical Kinetics</td>
<td>13</td>
</tr>
<tr>
<td>15</td>
<td>May 13</td>
<td>Chemical Kinetics, Course evaluations</td>
<td>13</td>
</tr>
<tr>
<td>Final Exams</td>
<td></td>
<td>Section 1: Wed. May 22nd (8–10am) MND 1005 Section 14: Wed. May 22nd (3:00 –5:00 pm) MND 1005 Section 27: Mon. May 20th (10:15am –12:15 pm) HMB 202</td>
<td></td>
</tr>
</tbody>
</table>

This schedule is a general guideline. There may be times when we get behind or ahead. You should always be reading ahead before each lecture to maximize your retention of the material presented each day in class.

In order to maximize your lecture experience it is imperative that you have read the text material covered prior to coming to class. I will not cover every section and problem covered in the text. A significant part of your learning will come from working problems on your own. Just coming to class will not be enough to get by in this course. If you are struggling with the material at any time you need to go to office hours.
### DISCUSSION AND LAB SCHEDULE
(All Discussion & Lab Materials are found on the Chem. 1A SacCT Website)

<table>
<thead>
<tr>
<th>Week</th>
<th>Discussion (Mon/Tues)</th>
<th>Lab (Wed/Thurs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (1/28)</td>
<td>Confirm Rosters</td>
<td>Check in, Safety Lecture, Quiz 1</td>
</tr>
<tr>
<td>2 (2/4)</td>
<td>Nomenclature Discussion</td>
<td>Exp. 1 (Density), Practice Prof. Exam</td>
</tr>
<tr>
<td>3 (2/11)</td>
<td>Moles, % Comp. Hydrates Stoichiometry</td>
<td>Quiz 2, Exp. 2 (Hydrates), Proficiency Exam</td>
</tr>
<tr>
<td>4 (2/18)</td>
<td>Net Ionic Equations</td>
<td>Quiz 3, Exp. 3 (Net ionic equations)</td>
</tr>
<tr>
<td>5 (2/25)</td>
<td>Solution Stoichiometry</td>
<td>Exp. 4 (Practice titration), Quiz 4</td>
</tr>
<tr>
<td>6 (3/4)</td>
<td>Gas Laws</td>
<td>Exp. 5 (Titration of an antacid), Quiz 5</td>
</tr>
<tr>
<td>7 (3/11)</td>
<td>Coffee cup cal, Hess's law Part 1</td>
<td>Exp. 6 (Analysis of Magnesium), Quiz 6</td>
</tr>
<tr>
<td>8 (3/18)</td>
<td>Enthalpy of Formation, Hess's law part 2</td>
<td>Exp. 7 (Calorimetry &amp; Thermochemistry)</td>
</tr>
<tr>
<td>9 (4/1)</td>
<td>No Discussions Mon/Tues (Cesar Chavez Holiday)</td>
<td>Exp. 8 (Flame Test &amp; Atomic Spectroscopy), Quiz 7</td>
</tr>
<tr>
<td>10 (4/8)</td>
<td>The Bohr atom Planck's Law Quantum Numbers</td>
<td>Exp. 9 (Qualitative Analysis), Quiz 8</td>
</tr>
<tr>
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*All experiments and discussion material must be downloaded & printed **PRIOR TO CLASS**. Your instructors **WILL NOT** have copies.

*Most experiments have pre-laboratory assignments that must be completed prior to lab. Students without completed pre-lab assignments **WILL NOT** be allowed to participate in lab until it is completed.

*ALL STUDENTS must bring a copy of the discussion material to each discussion section meeting. Failure to do so will result in point penalties.

*Pre-lab assignments are due at the beginning of class. Labs are due the following week.

*Please see the policies on due dates and Academic Honesty (CHEATING) presented in the syllabus.

1 Download from the course SacCT page. Attendance is mandatory.
I. SAFETY
   a. Familiarize yourself with the location and use of all safety equipment and emergency exits in the laboratory.
   b. Eating and drinking are not allowed in the laboratory at any time.
   c. Visitors are not allowed in the laboratory; leave the room for the duration of the visit.
   d. YOU MUST:
      • Wear department approved safety goggles at all times when in lab. Shields are never allowed!
      • Wear shoes that completely cover your foot when in lab.
      • Wear appropriate clothing that covers your skin or wear a lab coat when in lab.
   e. Long hair presents a serious fire hazard in the laboratory and must be properly restrained to minimize this hazard.
   f. Working in laboratories outside of the regularly scheduled periods is strongly discouraged. When such work is necessary, the written permission of both instructors is REQUIRED.
   g. Students in lower division laboratories are not to work in the laboratory unless an instructor is immediately available (i.e. in the lab).
   h. Students in upper division laboratories are not to work in the laboratory unless an instructor is available in the vicinity (i.e. on the floor).
   i. Experiments using utilities such as gas, water, steam, heat, etc. are not to be left unattended. If it is necessary to use these utilities overnight, you must attach a card signed by your instructor to the apparatus and notify the Chemistry Service Center.
   j. Broken glassware must be placed in the "glass disposal boxes" provided.
   k. Unauthorized experimentation is prohibited!
   l. **NO CHEMICALS, SUPPLIES, OR EQUIPMENT ARE TO BE REMOVED FROM THE LABORATORY WITHOUT THE WRITTEN PERMISSION OF THE INSTRUCTOR AND THE SERVICE CENTER SUPERVISOR.**

II. PREGNANCY
   a. Women that are, or may become pregnant should carefully determine, upon consultation with your personal physician or the Student Health Service Center, if it is advisable for them to participate in the laboratory program.
   b. If you are pregnant or are planning to become pregnant please inform your instructor.

III. CHEMICALS
   a. Treat all chemicals as if they were hazardous.
   b. It is the student's responsibility to know the hazards of the chemicals used in the lab. This information is located in the chemical's MSDS (material safety data sheet), which can be obtained from http://rtk.complyplus.com/frame.asp.
   c. Never put chemical waste down drains or in the trash receptacles. Use appropriately labeled waste containers.
   d. If a chemical waste container is almost full, immediately notify your instructor or the Service Center; **DO NOT OVERFLOW THE WASTE CONTAINER.**
e. Never put anything (i.e. spatulas, pipets, fingers, etc.) into a reagent bottle. Place any unused reagents in the appropriate waste container; DO NOT return it to the bottle.
f. Always return chemicals to their appropriate location.
g. NEVER remove or borrow chemicals from another laboratory.
h. If a required chemical is not available or needs to be refilled, notify your instructor.
i. If chemicals are spilled, clean up the mess immediately. This especially includes spill on or around balances and other equipment. If you are unsure of how to clean up a spill, seek assistance from your instructor or the Service Center.

IV. EQUIPMENT
   a. DO NOT use any equipment until you have been properly instructed in its use.
   b. DO NOT move ANY piece of equipment without the permission of your instructor.
   c. DO NOT attempt to alter or repair any piece of equipment. If it is not in proper working order, inform your instructor.
   d. Clean all equipment immediately after you have finished using it, and if it was borrowed or checked out, return it immediately.
   e. Because of the limited number of certain items. Special equipment issued by the Service Centers must be returned the same day or a fine of $5.00 will be assessed.

V. SERVICE CENTER
   a. The Chemistry Service Centers WILL NOT issue chemicals or equipment (other than those specifically listed for an experiment, student locker or instructional laboratory) without the consent of the instructor.
   b. The Service Center staff WILL NOT set-up labs after they have been taken down. The lab set-ups are available for one week after a lab is completed, so plan your time appropriately. It is best not to miss your regularly scheduled lab time.

VI. EMERGENCIES
   a. In the event of ANY EMERGENCY, notify your instructor, and the Service Center personnel immediately! DIAL 911 for emergencies, or 8-6851 to reach campus police on any campus phone. Emergency phones are located in the lobbies of each floor in Sequoia Hall.

The chemistry department is in the process of adopting additional safety policies with regards to clothing in lab coats. At the time of publication of this course syllabus, they have yet to be approved, however it is likely that university will require all student working in labs to wear lab coats at all times. I would recommend to you that you look into purchasing or obtaining a lab coat that covers the arms and down to the knee completely.
TEN WAYS TO PASS YOUR NEXT CHEMISTRY EXAM:

1. Don’t bother cramming. It won’t work. Cramming puts things into your short term memory. If you’re pressed for time and exhausted, it’s even more short term. You should study throughout the week before the exam so that when the day to take the exam comes, you will feel confident of your preparation.

2. Practice. You can’t memorize a page of a German dictionary every day and expect to be able to speak the language next week. You have to use the vocabulary you’ve learned in context, or it will slip away almost as fast as you learn it. The same is true of chemistry. You must work as many problems from the text and notes as needed to assure proficiency.

3. Read with your eyes closed. Study your notes and your textbook carefully. Then close your books and sit on them. Take out a sheet of paper and begin outlining the material you have been studying. You’ll see quickly where further study is required. You must do the same thing in solving problems from the end of the readings. Do not look at worked examples as templates. Simply substituting numbers from your problem into the corresponding places the example sometimes gets you the right answer, but you won’t know why. And when you are presented with a minor variation in the problem on a test, you won’t be flexible enough to handle it.

4. Get the big picture. Go over the lecture notes, handouts, problem sets, and laboratory work carefully and integrate all of these materials in your notes. Organizing the material will help you see connections and get the material into your long-term memory. However, don’t spend too much time simply making your integrated notes look good - there’s little satisfaction in being the neatest C student in the class.

5. Get help! You’re going to get stuck. There will be topics you just don’t understand, and problems you just can’t solve. This is what office hours are for. Attend them and don’t be afraid to let your problem be known. Your instructor is being paid to help you. Make him work for his money. He doesn’t mind.

Please don’t wait until the day of the exam to get help!

6. Give yourself a test. Take several problems from the chapters, write them out on a separate piece of paper and find out how long it takes you to work them. Do not use your book or notes, this will only hinder you in getting “exam ready”.

7. If you are pressed for time, you may have a hard decision to make. Should you concentrate first on those topics that you don’t understand well at all, or on those areas where you have some understanding? Ideally, you’d be able to study both, but if you’re out of time, you should study the areas where you have some understanding first. You must adopt this harsh philosophy because when standardized tests are used (as they are, in chemistry) you can expect to receive little partial credit.

8. Focus on objectives. “Learning Objectives” on the course handouts and in the text chapters tell you exactly what concepts you’re expected to learn and what skills you must master. Use those lists as a pre-exam checklist.

9. Manage time. You must spend at least an hour or two every day studying chemistry. Get a daily planner and find a 1 —2 hr block where you can focus on chemistry. This doesn’t include the actual time you spend in lecture and in laboratory, or even the time you spend writing laboratory reports or completing problem sets.

10. Relax. You can do this. Allow you to believe that. Avoid negative and panicky classmates when choosing study partners. On the night before the exam, pack a couple of sharpened pencils and a working calculator for the next day, and go to bed early. Lack of sleep can magnify test anxiety. Give yourself plenty of time to get to the exam site. Get there early.

A five-credit college level course takes a major bite out of your time. (If it doesn’t, you’re not getting your money’s worth.) Careful planning and good time management skills are essential. Set up a regular study schedule (daily planner) and stick with it.