

## Chemistry 6A Course Syllabus

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**Course Description:** **CHEM 006A: *Introduction to General Chemistry***  
5 units. Lecture three hours, laboratory discussion & laboratory three hours (one day per week).

**Course website:** [www.csus.edu/indiv/m/mackj/chem6a/](http://www.csus.edu/indiv/m/mackj/chem6a/)

**Rooms and meeting times:** *When you enroll in a discussion section, you are enrolled in the corresponding lab.*

<u>Section</u>	<u>Course code</u>	<u>Day(s)</u>		<u>Room:</u>	<u>Time:</u>
01	80548	LEC	MWF	MRP1000	09:00A-09:50A
02/03	82340	DIS	M	SQU428	10:00A-10:50A
	82341	LAB	M	SQU428	11:00A-01:30P
04/05	82342	DIS	T	SQU428	09:00A-09:50A
	82343	LAB	T	SQU428	10:00A-12:30P
06/07	82345	DIS	T	SQU428	01:30P-02:20P
	82346	LAB	T	SQU428	02:30P-05:00P
08/09	82347	DIS	Th	SQU428	05:30P-06:20P
	82348	LAB	Th	SQU428	06:30P-09:00P
10/11	82350	DIS	Th	SQU428	01:30P-02:20P
	82351	LAB	Th	SQU428	02:30P-05:00P

**Prerequisite:** One year high school algebra; high school chemistry strongly recommended. (CAN CHEM 006)

**Course topics include:** The structure of atoms, molecules and ions; their interactions including stoichiometry, chemical equilibrium, and oxidation-reduction reactions. **This course does not fulfill the requirements for more advanced study in chemistry and cannot be counted toward a major or minor in chemistry.**

### Required Materials:

**Text:** *Chemistry for Today: General, Organic, and Biochemistry, 6<sup>th</sup> Edition*  
(Seager & Slabaugh) ISBN-10: 0495112828

**Lab:** *Introduction to General, Organic and Biochemistry in the Laboratory, 8<sup>th</sup> Edition*  
(Hein, Peisen & Ritchey) ISBN-0-471-45194-0  
Chemistry department approved safety goggles

**Homework:** *OWL:* Online Web-based Learning (see inside)

### Optional Materials:

Study Guide and Solutions Manual to accompany ISBN-10: 0495112712

**Learning Goals:**

For those who have never experienced “chemistry,” the discipline can be viewed as a type of “foreign language.” As with any foreign language, one must learn to read and speak the vocabulary and grammar of the language. The vocabulary of chemistry consists of the elemental names and symbols found on the Periodic Table. The Grammar of chemistry involves a series of rules used to name chemical compounds and molecules. These rules are collectively known as chemical nomenclature. In order to pass this class one must become proficient with the use of proper chemical nomenclature. Another important skill that you will be required to attain is that of problem solving using dimensional analysis. Dimensional analysis is a systematic approach to problem solving that uses units or dimensions and conversion factors.

1. Learning and appreciating the “scientific method” and being able to apply it to both theoretical/actual chemical situations and “real-life” non-chemical problems.
2. Understanding the “basic chemical building blocks” of atoms and molecules and the types of forces that hold together or stabilize their structures.
3. To develop a proficiency in writing chemical equations that express, in a shorthand manner, what products are generated, under given conditions, from specific starting reactants.
4. To becoming familiar with the basic states of matter and the energies related to cooling, heating, and converting one state of matter to another.
5. Comprehending the role of the electron in oxidation/reduction reactions.
6. To becoming familiar with not only the “acid/base” relationship, but how this relationship constantly appears in everyday life.

**Required Writing Component:** Chemistry 6A is listed in Area B, Sub areas B1 and B3 of the G.E. Program. Area B, Sub area B3 requires that a writing component be included in the course. Hence, a writing component is included within the laboratory portion of Chemistry 6A. *In other words part of your grading in the course will include the use of proper English grammar in answering pre and post laboratory questions.*

**Adding Chem. 6A**

This course may be added only through the Laboratory as we are limited by locker space. You may be required to visit more than one lab section in hopes of finding an open slot. Each laboratory instructor will decide who and how many may be added. The instructor will sign add slips by the third meeting; all individuals adding must return the signed add-slip to the Chemistry Department office, SQU 506.

**Dropping Chem. 6A**

Each student has the responsibility of dropping any courses in which he/she is enrolled, but did not attend or stopped attending. Students drop courses by telephone or on-line during CASPER or CASPER Plus. The Class Schedule lists deadline dates and procedures. 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). All drops after the second week of instruction must have the approval of the instructor and department chair and are allowed only for serious and compelling reasons (such as illness, change in employment schedule, carrying an excessive load or inadequate preparation for the course). All drops after the sixth week of instruction must have the approval of the instructor, department chair, and college dean and are allowed only for career-related or medical reasons beyond the control of the student. No drops are allowed after the last day of instruction. Courses officially dropped during the first four weeks of instruction will not be recorded on the student’s permanent record. A grade of “W” will be recorded for courses in which a drop has been authorized after the fourth week of instruction. Students will receive a final grade of “WU” or “F” in course(s) they fail to officially drop. *Students who fail to check-out of their assigned locker will have a hold placed on their records. You will not be allowed to enroll in subsequent semesters until a fine is paid.*

**Laboratory Fees:** Students enrolling in chemistry laboratory courses or supervisory courses involving laboratory research are required to pay a laboratory fee for each course. In addition, if a student breaks an item in a laboratory, s/he is required to replace it or pay a breakage cost. An administrative hold is placed on a student's academic record if either is not paid. Details are given at the first class meeting.

<b>Grade Scale:</b>	90 – 100%	A – / A	<i>These percentages may be adjusted depending on the class average and high score.</i>
	80 – 90%	B – / B+	
	67 – 80%	C – / C+	
	66 – 50%	D	
	50 – 0%	F	
<b>Point total:</b>	Exams:	(3 x 100 pts)	300
	Quizzes:	(best 9 of 11 x 15pts)	135
	Final:	(cumulative)	200
	Lab:	(your % x 200)	200
	HW		65
	<b>Total:</b>		<b>900 pts</b>

Exams will be taken in lecture, they will be cumulative: i.e. material covered in units I & II may appear on exam III etc...

### Grading:

- 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.
- 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 also 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".

Please review the University's [Academic Policies](http://aaweb.csus.edu/catalog/02-04/IntroductoryPages/02-04__Academic%20Policies.pdf) for further information. ([http://aaweb.csus.edu/catalog/02-04/IntroductoryPages/02-04\\_\\_Academic%20Policies.pdf](http://aaweb.csus.edu/catalog/02-04/IntroductoryPages/02-04__Academic%20Policies.pdf))

**Accommodations for Students with Disabilities:** Reasonable accommodations, including auxiliary aids, 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.

**Classroom Etiquette:** Any student who disrupts the class will be asked to leave. This is a college course and I expect you to behave with the maturity and respect that adults afford one another. No talking will be permitted unless it concerns class business. *The use of cell phones, laptops and mp3 players in the classroom is strictly prohibited.* Please be sure that your cell phone is turned off prior to class. Repeated disruptions will result in dismissal from the course. If you must leave lecture early, please notify your instructor prior to class. Also, repeated tardiness that disrupts the class will not be tolerated. Please also treat your laboratory instructors 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.

**Academic Honesty: (CHEATING)**

Any cheating what so ever will be addressed with zero tolerance. Please refer to the university policy on such matters.

<http://www.csus.edu/admbus/umannual/UMA00150.htm>

**Attendance (Lecture:)** Although attendance in lecture is not mandatory, studies show that there is a very strong correlation between lecture attendance and grades. The chemistry department estimates that a student will score one letter grade lower for every 2 to 3 days of lecture missed. However, be forewarned that merely attending lecture and copying the instructor's notes does not guarantee success! 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.

**Exam Policy:** There will be three 50 minute lecture exams given (one approximately every four weeks). The exams will be based on the text, HW, lecture and lab materials. All of the exams and quizzes are closed book. No late or make up exams shall be offered.

**Final Exam Policy:** The final exam will be comprehensive. All students must take the final in order to pass the course. No late or make up final exams shall be offered.

**NO NOTE CARDS WILL BE ALLOWED.** You will need to bring a calculator and pencil (which I prefer) to each exam. Scratch paper, basic equations, needed scientific constants and periodic tables will be provided. In this course, the information presented builds upon itself such that the material covered in one unit will be integrated into the material on the next and so on. Consequently, the questions on each exam will become successively more complex and involved. If you desire to earn a high mark in this course, you must keep up with the material as outlined in the lecture schedule. *It is almost impossible to catch up once you get behind.*

**Practice Exams: I will not provide you with a "practice exam".** There are more than enough problems in your text to adequately prepare you for any exam. It is *your responsibility* to work through the homework and as many additional problems as it takes for you to understand the material presented in this class. There are also many additional resources available in the library and on the Internet.

For each exam you will be provided with a series of review problems one week before the exam. It is *your responsibility* to work on these prior to the review discussion in lab. (see lab schedule)

*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...

**Homework:** Homework will be assigned and recorded using the OWL (Online Web-based Learning) 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 OWL website. DO NOT LOSE THIS INFORMATION! I will have links to the OWL system on my chem. 6A homepage. From time to time I will assign additional homework problems via the OWL system as extra credit. Credit for these problems will apply to your homework percentage up to a maximum of 100 % of, but not above the total (65 points). Please see the information provided at the end of this syllabus or on the homework page of the website before logging on to the OWL system.

**Lab Tardiness:** You are responsible for showing up on time to the discussion and the lab. If you are late you are responsible for making up any missed time.

**Quizzes:** Quizzes will be administered in the lab at the beginning of the discussion section. The quiz will cover the previous week's lecture material, HW assignment and material from the previous experiment. You will have only 15 minutes to complete the quiz. If you are late, you will have only the fraction of the 15 minutes left to complete the quiz. If you miss a quiz you will receive a zero. There will be no make-up exams or quizzes given.

**Lab absence:** 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. After that, you need written verification to be excused from a missed lab.*** If you do miss lab, it must be made up within one week. 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.***

**Lab Scoring:** At the end of the semester, the sum of your lab points will be normalized to a total of 200 points (20% of your grade). For example, if you earned 85% of the assigned points, then 170 points would be added to your overall point total of 1000. ***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.***

**Pre-laboratory assignments:** Most of the experiments have pre-lab assignments that must be completed ***before*** coming to lab to perform the associated experiment. The pre-lab assignment is due at the beginning of the lab period. If your pre-lab assignment is incomplete, you will not be allowed to perform the lab and you may not take the quiz. If the pre-lab is late, you still must turn it in; however, it will receive zero points.

**Laboratory Reports:** ***You must complete and turn in all lab reports to pass the class. A report that is turned in blank is unsatisfactory and will result in failing the course.*** Laboratory reports are due at the beginning of the lab ***one week*** following the completion of the experiment. Late lab reports will be assessed a penalty of five points per lab period. After lab reports have been graded and returned, a late report will receive zero points.

**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.

**Laboratory Fees:** A university lab fee is required. You will obtain more information about paying this fee at your first lab section meeting.

**Resources for Help:** Your professor and the lab instructors will hold office hours each week. Teaching Assistant office hours are held in Sequoia Hall, room 502. The TA office hours will be posted outside the HELP Office. You are welcome to go to ANY of the Chem. 6A 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 hours per week outside of class time studying chemistry. 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.

**Important Dates:**

- Instruction Begins: September 4, 2007 (*labs will meet during the 1<sup>st</sup> week*)
- Last day to drop via CASPER: 9/14/07
- Exam 1: 10/5/07
- Last day to drop with a "W": 10/12/07
- Exam 2: 11/2/07
- Veteran's Day (campus closed): 11/12/2007
- Thanksgiving break: 11/22/07 to 11/23/07
- Exam 3: 12/7/07
- Final Exam: 12/21/07 (8:00 – 10:00)

**Miscellaneous Information:****Computer Lab Locations**

[ARC 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 / 2008](#) – 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:** ARC 2005

**Setting up a SacLink account:** <http://www.csus.edu/saclink/settingUp.stm>

**My website:** <http://www.csus.edu/indiv/m/mackj/>

**The text OWL website:** <http://owl3.thomsonlearning.com/>

**Chem. 6A F2007 Lecture Schedule**  
(Subject to Adjustment, Exam dates firm)

*I will announce specific sections to skip on a weekly basis.*

Week	Date (week beginning)	Monday	Wednesday	Friday
1	9/3	No class	Introduction	Ch. 1
2	9/10	Ch. 1	Ch. 1	Ch. 1 & 2
3	9/17	Ch. 2	Ch. 2	Ch. 2 & 3
4	9/24	Ch. 3	Ch. 3	Ch. 3 & 4
5	10/1	Ch. 4	Ch. 4	<b><u>Exam I</u></b>
6	10/8	Ch. 4	Ch. 4	Ch. 4
7	10/15	Ch. 5	Ch. 5	Ch. 5
8	10/22	Ch. 5	Ch. 5 & 6	Ch. 6
9	10/29	Ch. 6	Ch. 6	<b><u>Exam II</u></b>
10	11/5	Ch. 7	Ch. 7	Ch. 7
11	11/12	No class	Ch. 8	Ch. 8
12	11/19	Ch. 8	Ch. 9	No class
13	11/26	Ch. 9	Ch. 9	Ch. 9
14	12/3	Ch. 9 & 10	Ch. 10	<b><u>Exam III</u></b>
15	12/10	Review	Review	Evaluations
Finals	12/17	<b>Final Exam: (Friday 12/21) 8:00 am</b>		

Any modifications to the schedule will be posted on the website.

**Chem. 6A F2007 Laboratory Schedule (SQU 428)**

Week	Date (week beginning)	Experiment	Quiz
1	9/3	No Labs	
2	9/10	Check in, Exercise 1 in class (back of lab manual)	yes
3	9/17	Exp. 2 "Measurements"	yes
4	9/24	Exercise 2, 3 in class (back of lab manual)	yes
5	10/1	Exp. 3 "Preparation of Oxygen"	yes
6	10/8	Exp. 7 "Water in Hydrates"	yes
7	10/15	Exp. 9 "Composition of $\text{KClO}_3$ "	yes
8	10/22	Exp. 10 & 11 "Double and Single Displacement reactions"	yes
9	10/29	Exp. 13 "Identification of Selected Anions"	yes
10	11/5	Exp. 16 Electromagnetic Energy and Spectroscopy*	yes
11	11/12	No labs	
12	11/19	No labs	
13	11/26	Exp. 17 "Lewis Structures and Molecular Models"	yes
14	12/3	Exp. 22/23 "Neutralization Titration I & II" *	yes
15	12/10	Check-out and Evaluations	no

\* Download modified experiment from website

**Please note:**

All Experiments must be accompanied by a pre-lab write up that is due at the beginning of the lab. The pre-lab must be word processed. The pre-lab will count approximately ten percent of the experiments. One may not participate in the lab without completing the pre-lab. In other words you will need to make up the lab in another section within the week it is offered.

There are no pre-labs associated with the end of the lab manual exercises; however these are to be completed and turned in at the end of the lab period.



EXAMPLE OF PRELIMINARY LAB ASSIGNMENT**Name:** Jane G. Chemnerd**Section:** 9**Date:** January 1, 2007**EXPERIMENT 6:** Freezing Points--Graphing of Data**PURPOSE:**

The subject of this experiment is designed to illustrate two main concepts. First, the process of freezing a substance is to be investigated by studying the temperature of a liquid or solid as a function of the length of time that liquid or solid is held within a test tube that is itself held within a beaker of ice. Second, to better understand the useful procedure of graphing experimental data, the experimentally observed temperature and time data are to be plotted to produce a graphical representation of the freezing process.

**PROCEDURE:**

Important points to note during procedure:

1. Use only clean and dry equipment.
2. Read and record all temperatures to the nearest 0.1°C

Steps in experiment:

1. To the indicated position on the ring stand, clamp the 18 x 150 mm test tube.
2. Assemble the slotted cork and thermometer into the correct configuration in the test tube.
3. Obtain and pour 10.0 ml of glacial acetic acid into the ring stand mounted test tube and adjust the temperature of the acetic acid to approximately 25°C.
4. Position a 400 ml beaker that is filled with an ice-water mixture under the clamped test tube.
5. Record a temperature for the acetic acid that corresponds to a 0.0 minute reading and then lower the clamped test tube into the ice bath so that all of the acetic acid is below the surface of the ice water.
6. With constant stirring by motion of the thermometer, record the temperature of the acetic acid every 30 seconds. Stop stirring when crystals begin to form within the acetic acid.
7. Continue recording the temperature at 30 second intervals until a total of 15 minutes has elapsed. To maintain a constant ice bath temperature, the ice water is occasionally stirred.
8. Place the test tube, with the thermometer still within the acetic acid, in warm water to melt the frozen acetic acid. Keep this liquid for additional experiments.
9. Weigh 0.450 g of benzoic acid and place the benzoic acid into the acetic acid containing test tube from above. Stir the acetic acid-benzoic acid mixture until the benzoic acid dissolves.
10. Using a fresh ice bath, repeat steps four through 7 for the acetic acid-benzoic acid mixture.

**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. **Study what you know best first.** 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.