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Course Information - Updated August 20, 2010

## Chemistry 152/152L Fall 2010 Syllabus: Information

**Instructor:** Dr. David W. Lingner (dlingner@sdccd.edu)

**Fall 2010:** Aug 23 - Dec 18, 2010 (16 weeks)

**Office Hours:** Sundays, 7-9 pm, at Panera in Mira Mesa. You can contact me any time via email. Another good time to ask questions is during lab periods, if you finish early. Other times are possible, as needed, depending on our schedules.

This syllabus is your **contract** with me regarding course policies. Please use this syllabus and the website as your primary information resources. Read the entire syllabus at least once, so that you know what to expect. The website address for this syllabus and additional information is <http://lingnerchem.com/miramar/152/>.

According to District policy, you must be enrolled in both the lecture (152) and lab (152L) concurrently. If you are not enrolled in my lecture course AND my lab course this semester, to avoid being dropped, you must show me one of the following: (a) your transcript showing that you have passed the co-requisite course, or (b) your current schedule showing that you are enrolled in another section of the co-requisite course, or (c) a petition to waive the co-requisite course obtained from the admissions office and signed by the chair of the chemistry department.

<b>Chemistry 152 Lecture (3.0 unit)</b> <b>M &amp; W 4:55-6:20 pm, Rm S5-203 (CRN 65702)</b>	<b>Chemistry 152L Lab (1.0 unit)</b> <b>M 6:30-9:40 pm, Rm S5-200 (CRN 65717), or</b> <b>W 6:30-9:40 pm, Rm S5-200 (CRN 49550)</b>
<p>Chem 152 is a one-semester preparatory course in chemistry consisting of an intensive study of some of the principles of inorganic and physical chemistry that are needed before taking Chem 200. Topics include unit conversions, atomic structure, chemical names and equations, periodicity, stoichiometry, solutions, intermolecular forces, and gas laws.</p>	<p>Chem 152L is a one-semester laboratory course intended as the companion course for Chem 152. Topics include chemical measurement, significant figures, laboratory safety, laboratory techniques, chemical reactions and stoichiometry. An emphasis is placed on problem solving, data analysis, and chemical calculations.</p>
<p><b>Textbook:</b> <i>Introductory Chemistry</i>, 3rd Edition, by Nivaldo Tro.</p> <p><b>Calculator:</b> You will need a calculator that can do basic arithmetic, logarithms, and exponential notation. Please bring your calculator to every class and lab.</p> <p><b>Recommended:</b> TI-30XA solar, for about \$10-15.</p> <p><b>Important:</b> Programmable calculators are not allowed on exams. If you can enter words or letters into your calculator, or if the letters A-Z appear on the front of your calculator, then don't bring it to this class. You may not share calculators during exams.</p>	<p><b>Lab Manual:</b> <i>Chemistry 152L Lab Manual, San Diego Miramar College</i>. Available at the college bookstore.</p> <p><b>Supplies:</b> Students must use splash-proof safety goggles during lab and use a V-629 lock. Grade deductions for "loaner" locks &amp; goggles begin on 9/13.</p> <p><b>Safety:</b> Please read the safety information carefully and pay special attention to safety instructions given during each lab session. A chemistry laboratory can be a very safe place to work if you and your fellow students understand and respect the various chemical and physical hazards.</p>
<p><b>Prerequisite:</b> Math 096 with grade of "C" or better, or equiv, or assessment Skill Level M50.</p> <p><b>Advisory:</b> Engl 051 &amp; Engl 056, each with grade of "C" or better, or equiv, or assessment Skill Levels W5/R5.</p>	
<p><b>Co-requisite:</b> Students must enroll concurrently in Chem 152 and Chem 152L. This course is not open to students with previous credit for Chem 151. It is intended for those students majoring in one of the natural sciences, engineering, or related curricula who do not meet the entrance requirements of Chemistry 200. City, Mesa, Miramar- Chem 100, 100L and 152, 152L combined: maximum credit, 4 units. No credit for Chem 100, 100L or 152, 152L if taken after Chem 200.</p>	
<p><b>Follow-on:</b> Chem 152 and 152L are prerequisites for Chem 200 and 200L.</p>	
<p><b>Students with Disabilities:</b> Any student with a disability should talk with me during the first two weeks of class, so that we accommodate your learning process. You should also contact the DSPS office on campus. I will do my best to make the class workable for you.</p>	

*"Haec studia adolescentium alunt, senectutem oblectant, secundas res ornant, adversis perfugium ac solacium praebent."*

*"These studies fortify one's youth, delight one's old age; amid success they are an ornament, in failure a refuge and comfort."*

– Marcus Tullius Cicero

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Course Policies - Updated August 20, 2010

## Chemistry 152/152L Fall 2010 Syllabus: Policies

**Class information.** I expect you to be active learners, who make an effort to learn *during* lecture and lab, and to enjoy chemistry this semester. If you miss a lecture, you remain responsible for all information, assignments, announcements, and schedule changes.

**Be courteous.** Please use your classroom and lab time wisely, and treat classmates with the same respect and kindness that you should expect from them. Disruptive students may be removed from the class session and the next one (**District Code** of Student Conduct).

**Adding Classes.** Students adding Chem 152 are added in the following order if enrolled in Chem 152L (or vice versa; in lab and adding lecture): (1) Official Wait List, (2) Previous Arrangements, (3) Random Crashers.

**Drops by Student.** You will receive a grade if you remain on the roster after 9/3/2010, even if you have decided to drop the course. Until 10/29/2010, a grade of W may be assigned to students who withdraw after 9/3/2010. After 10/29/2010, a grade of A, B, C, D, or F must be assigned. If you do decide to drop the course, you must contact Admissions and actually drop it.

**Drops by Professor.** *District policy* requires me to drop any registered student who does not attend or is late, and does not have a prearranged excused absence, on the first day of class. I may also drop any student with two or more unexcused absences. Don't count on me to drop you, however, if you have stopped attending class.

**Safety Note.** If you drop Chem 152 must also drop Chem 152L and check out of lab. You are responsible for any missing equipment. Failure to check out by the end of the semester will result in a lab fine on your college account (see Lab Check-In sheet for details).

*Student Learning Outcomes, Chem 152 (Lecture):* Students will be well prepared for the General Chemistry sequence by attaining a solid background in chemical nomenclature, unit conversions, stoichiometry, and introductory concepts of atomic structure, bonding, and selected other topics.

**Attendance.** I expect you to be present and on time for each lecture and lab class. Absences, tardiness, and early exits will be noted and recorded, and may affect your grade in borderline situations. Miramar College policy allows me to treat late arrivals and early departures as absences. Absences are "excused" only by *prior notification* of your instructor according to these guidelines:

- *Professional / personal reasons*, including non-emergency illness: You must notify me before the start time of the class you will miss.
- *Emergency:* Contact me (or arrange for a friend or family member to contact me) as soon as possible, but no later than one day after the class you miss.
- *Acceptable Notification*, in order of preference:
  1. E-mail to dlingner@sdccd.edu (*best method*)
  2. Written note given directly to me.
  3. Written note in my mailbox (Rm A-104).
  4. Contact by phone is not recommended; I do not use my SDCCD voicemail.

**Make-Up Work.** No opportunities exist to make up any assignments that you miss due to absence, tardiness, or early exit (excused or unexcused). If you know you will be absent or late for a class on which a take-home assignment is due, you may submit your assignment by scan/email to dlingner@sdccd.edu before the due date and time.

**Office Hours.** I don't have an office at Miramar, but you can reach me by email anytime. Periodically, I will hold office hours at a nearby restaurant or other location (Sunday evenings, 7-9 pm at Panera, and as announced). These meetings are **not required** and are designed to provide you with an opportunity to ask questions or just to study with me nearby.

*Student Learning Outcomes, Chem 152L (Lab):* Students will be well prepared for the laboratory courses in the General Chemistry sequence by gaining experience in basic observations and measurements, laboratory techniques, manipulations, calculations, and safety.

"Eighty percent of success is showing up." - Woody Allen

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Grades - Updated August 20, 2010

## Chemistry 152/152L Fall 2010 Syllabus: Grades

Grades for CHEM 152/152L are separate courses. You will receive a separate grade for each.

Chem 152 & 152L	
Grade	Points Earned
A	90.0% or more
B	80.0 - 89.9%
C	65.0 - 79.9 %
D	50.0 - 64.9 %
F	under 50.0 %

Your CHEM 152 grade depends on scores from exams, quizzes, and other activities.

Chemistry 152 (Lecture)	
Graded Item	Value
Exam 1	25%
Exam 2	25%
Exam 3	25%
Quizzes/Activities	25%
(Lowest from above)	-25%
Final Exam	25%

Your CHEM 152L grade depends on scores from lab reports, pre-lab assignments, and lab quizzes. The lowest score in each lab grading category (except for the final lab quiz) will be dropped.

Chemistry 152L (Lab)	
Graded Item	Value
Lab Reports	70%
Pre-Lab Questions	10%
Lab Quizzes	15%
Final Lab Quiz	5%

**Solutions and explanations** should be clear enough so that one of your peers could easily follow what you did if they had not worked the problem before. When an assignment calls for a calculated answer, you increase your chances of arriving at the correct answer (and receiving partial credit) if you show a clear, step-by-step solution using dimensional analysis / unit conversions. The answer alone, even if it is correct, will not earn you full credit. This means you must show each conversion factor used in each calculation, with units on each number.

**Collaboration.** I encourage collaboration among you and your peers while working on labs and assignments, but not on exams or quizzes. In any case, the work you submit must be your own, and not a copy. You may split up the specific tasks, but each person must make observations, do calculations, and write answers individually. The guideline is that you should have no trouble explaining or repeating any work that you turn in. Please do your best to stay involved in classwork and lab experiments.

**Academic Honesty.** All students are expected to uphold the highest standards of honesty and integrity in their academic work. Penalties, such as automatic grades of zero, will result from cheating, copying, plagiarism, or deceit of any kind (SDCCD Policy 3100). Cheating on a quiz or exam includes use of prewritten notes, allowing another student to copy your answers (i.e., not preventing it), looking at another student's answers, using a cell phone or programmable calculator, or deceit of any kind. In addition, please do not wear hats, hoods, headphones, or sunglasses while taking exams or quizzes.

**Please be fair.**

If you look at someone else's paper during a test, or copy directly from another student on any assignment, then you and the person from whom you copied will both earn a zero on the assignment or test without notice or exception. Miramar College may also wish to pursue academic sanctions, expulsion, and/or legal proceedings.

**Fairness** is paramount in academics and is my first priority in grading. Grades are determined based on the percentage of points earned in each grading category. For work done in non-erasable ink, I will consider re-grade requests if you think I have assigned points erroneously.

**Exams & Quizzes** have fixed starting and ending times, and there is an important difference between knowing the material and knowing the material well enough to finish a test within the allotted time. I expect you to anticipate my test questions and ask beforehand if you don't feel comfortable with your knowledge of a topic being covered. You should never be surprised by anything you see on an exam or quiz.

The Comprehensive Final Exam and the Final Lab Quiz are both mandatory. If you anticipate having trouble attending class on the day of the finals, then you must discuss the conflict with me during the first two weeks of class.

Chemistry is a cumulative subject where information builds upon concepts learned earlier in the class. All exams and quizzes are therefore comprehensive and will include material covered on previous exams, as well as newer material. You can expect the amount of old material on an exam will increase for later exams, with the final exam being completely comprehensive.

Last day to drop class with no "W" recorded is 9/3/2010. Last day to drop with "W" is 10/29/2010.

*"People rarely succeed unless they have fun in what they are doing." – Dale Carnegie*

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Details - Updated August 20, 2010

## Chemistry 152/152L Fall 2010 Syllabus: Lab Details

**Get to lab on time**, so you can turn in your pre-lab questions on time, take the quiz, and participate in the pre-lab discussion. This is a safety-related requirement. If you miss the lab-specific safety information presented at the beginning of each lab, you may be a potential hazard to your classmates. If you are late, you must talk with me before beginning your lab work. Consistent tardiness to lab will result in you being dropped from the course. You may leave early if you have submitted your lab report and your work area is clean.

**Pre-Lab Assignments and Quizzes.** The pre-lab assignment for each experiment is due and lab quizzes begin promptly at the start of the lab period, regardless of your arrival time. These pre-lab assignments ensure that you are prepared to do the experiment, and the quizzes test your understanding of the current and previous labs.

**Lab Report Requirements.** Lab reports are done by individual students. Usually, you will perform the experiment in groups, but each one of you must submit an individual lab report. Pass in the double-sided pages from the lab manual in numerical order, stapled. Write your name and the lab number on the front page of your report. Write the word "Partners:" and the names of each of your partners for the experiment on the front page below your own name. (If you perform the lab without partners, write "no partners" beneath your name.)

**Lab Partners.** Typically, you will be working with a single lab partner. This may, but does not have to be the person with whom you share an equipment locker. For some experiments, we'll work in larger groups, as specified during the pre-lab discussion. Lab groups larger than the specified maximum will suffer point deductions on their lab reports.

**Lab experiment make-ups might** be possible during another lab period at Miramar: (1) if your absence is excused, *and* (2) with my prior approval, *and* (3) with the prior approval of the other lab instructor, *and* (4) if the other class is doing the same experiment. Without these four conditions being met, a lab make-up is impossible. Be aware that available make-up times may occur prior to your absence, so you must plan ahead as much as you can!

**Suggestions for Lab.** To do well in the lab, you must prepare for each experiment. Before you walk in the door, I expect you to read the lab experiment and attempt to envision what you'll be doing. Ask questions beforehand if anything doesn't make sense! Write out the procedure in your own words, draw pictures, and think of questions for the prelab discussion. Your time spent planning for each experiment will pay off in efficiency, accuracy, and safety while you're in the lab.

**Dress for Lab.** Wear old clothes. In general, if you would be sad to see a piece of clothing or jewelry dissolve or become permanently stained, then don't wear it to lab (or wear a lab apron over it). Required clothing includes shoes with tops and safety goggles. Latex gloves and lab aprons are optional and available in the campus bookstore.

**Safety Goggles.** The requirement to wear safety approved goggles during lab will be enforced continuously with warnings and point deductions. You will need to be wearing your goggles whenever any student is working with chemicals or lab equipment. "Rental" goggles will cost 5% the first time; the cost will double each week.

**Lab Drawers ("lockers").** Groups of two students share lab equipment in a locked drawer. During check-in, you will sign a paper saying that you will return the drawer with all of the equipment in good condition at the end of the semester. Check-in is your opportunity to make sure it is all present and in good condition when you get it.

**Locks.** Each "locker group" must purchase a **V-629** lock from the Miramar Bookstore. This provides easy access and security and is a chemistry department requirement, and it allows the lab technicians to open your lockers in case of spills, fumes, etc. Locks not of the V-629 variety will be cut off. Groups without V-629 locks will lose points from each lab report, starting at 5% and doubling each week.

### Before you leave.

- Read the whiteboard. Check for announcements.
- Wash your hands and clean your benchtop.
- Return borrowed equipment to original location.
- Pour chemicals into the hazardous waste container.
- Don't forget to pass in your report(s).

*"I mixed this drink myself. Two parts H, one part O. I don't trust anybody!" - Steven Wright*

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Safety, updated August 20, 2010

## Chemistry 152/152L Fall 2010 Syllabus: Safety In The Laboratory

A college chemistry lab is a relatively safe environment when students follow simple safety rules, know what they are doing in their experiments, and pay attention to specific hazards of each chemical and procedure. **You are responsible for laboratory safety.** You will be handling glassware, fire, and chemicals which may be flammable, corrosive, reactive, and/or otherwise toxic. The most frightening aspect of this is that your classmates (some of whom may not have read the lab manual nor listened very well during the prelab discussion) are handling the same dangerous materials. Each student is responsible for following all safety rules. **Safety** is the most important aspect of Chemistry 152L. Please read the safety rules on your Check-In sheet. Violation of any safety rule may result in dismissal and a grade of zero on the lab.

*You must be present for each "pre-lab" safety and orientation discussion. If you arrive late and miss it, please see me before you begin working on your experiment.*

Some general rules are outlined below. Others will be distributed with your check-in materials. Still more rules will be stated by your instructor for specific labs during the pre-lab discussion. It is very important that you arrive on time for each lab so that you can hear the pre-lab discussion and be aware of the specific safety hazards involved for each experiment.

1. **Safety goggles (ANSI-Z87 certified splash proof goggles, not glasses with side shields).**
  - a. Required whenever anyone in the room is working with chemicals or lab equipment.
  - b. If you need a break from goggles, leave the room for a while.
  - c. Students violating Rule 1.a. will lose lab points and/or be dismissed from lab.
2. **Proper clothing.**
  - a. Old clothes. (Note: strong acids, bases, and some other chemicals will dissolve and/or stain most fabrics.)
  - b. Shoes with tops, i.e., close-toed shoes (to protect against falling objects or chemicals).
3. **Experiments.**
  - a. Conduct experiments strictly as outlined in the lab manual, unless modified by instructor.
  - b. No unauthorized experiments.
  - c. Never use laboratory chemicals or equipment without an instructor present.
  - d. Dispose of chemicals in the proper hazardous waste container. If you're not sure, please ask!
  - e. LISTEN and PAY ATTENTION during pre-lab discussion. This is when I go over the chemical concepts and experimental procedure, and point out some of the experiment-specific hazards and important precautions. Do not be late for lab! (This is a safety policy, in addition to being a District rule.)
4. **List of NO's.**
  - a. No fooling around with chemicals or equipment.
  - b. No messy bench tops. Clean up all spills immediately.
  - c. No smoking.
  - d. No eating.
5. **List of KNOW's.**
  - a. Know hazards of each particular chemical. (see MSDS collection in the lab or online)
  - b. Know location of all safety equipment, including the exits, fire extinguishers, eye wash and shower, first aid kit, dustpan and brush, glassware and hazardous waste disposal locations, fire blankets, telephone and/or "red" emergency call box, lab hoods, and the MSDS collection.
  - c. Know when and how to use all safety equipment.
  - d. Know what you're doing in the lab, and why you're doing it. If you don't know, please ask!



Additional rules will be presented on the first day, and later for each specific experiment. Violation of any safety rule may result in dismissal from class. If dismissed, you lose credit for the lab. Please be safe.

*Safety goggles are required whenever anyone is working with chemicals or equipment in the laboratory room.*

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Hints - Updated August 20, 2010

## Chemistry 152/152L Fall 2010 Syllabus: Study Hints

**Learn chemistry in class and lab;** don't wait til you get home and don't hope that the book will make more sense than I do (although in some cases, it probably will). My exams are directly related to the material I cover in class. Practice problems, quizzes, laboratory questions, and in-class or take-home activities are meant to reinforce and enable practice of the knowledge you gained in class. Learn now, while you're sitting here with me, so don't put it off until you get home. I'm here to help you learn chemistry.

**Take excellent notes** on everything I say and write in class. You're here to listen, ask questions, and learn actively. This is your chance. Scribble quickly and learn chemistry during class. Don't wait until the day (or hour) before each exam. Go home after class and copy your notes neatly into another notebook. Recopying your notes in your own words, with the textbook nearby to amplify and clarify the information) is often a good way to learn things.

**Read the book.** Skim each chapter before I cover it, then you will have some idea of which questions to ask. You'll also be more aware of what I am skipping. After lecture, use the suggested practice problems to focus your reading toward the parts of the chapter that I talk about in class.

**More Suggestions:** An understanding of chemical concepts and calculations requires thought and practice. Don't expect to fully comprehend everything. And don't just give up when you don't "get it" immediately. Expect to study hard; strive to study effectively; figure out what I want you to know. This course is as much a course in problem solving ("word problems") as it is a conceptual and descriptive chemistry course. My goal is to make everyone comfortable with science and to help each of you earn an "A" in this class. If you pay attention, follow directions, ask questions, challenge yourself to learn in class, actively review at home, figure out what you'll see on exams, and read the manual before you arrive to lab, then you'll do well.

**Exam Preparation.** I expect each of you to take responsibility for your own learning both in class and while you're studying at home. You'll soon realize that actively challenging yourself to do the problems during class or lab, and practicing at home are the best ways to figure out what I want you to know and to get ready for my exams. **Start now.**

**Be Interested.** You'll get best results if you listen carefully while you're in class. Try to act interested (it may be habit-forming). The first things you should expect to see on a test are the topics that I cover in class and examples that I provide for practice. If you realize this truth now, you'll be happier with your performance on exams and quizzes later in the semester. If you focus on learning only from the book, you'll probably be misdirecting your time and effort.

**Ask questions!** It is my job to answer them. Scientists are curious characters! People either know all of the answers or they ask. I usually assume people understand me. If you are so lost that you don't know what to ask, then ask me what to ask! Yes, try it. I have never heard an unnecessary question, and I am not one of those people who judges students negatively based on the questions that they ask. On the contrary, I admire those of you who are smart enough and brave enough to clarify things before you need to take an exam and before an assignment is due. Don't ever think that you don't deserve to ask a question, or that you're going to "drag the rest of the class down" if you ask a "simple" question during class. Those are the lamest excuses I know. The best time to ask questions is during class. The second best time is anytime via email. I've had email for about 30 years now, and I've never been bothered by a message from someone I know. Those of you who ask questions eventually become the smartest people in the class. Those who neither know nor ask will find this course very difficult to pass. Okay, now *read this paragraph again.*

**The PLACe,** our tutoring center, is located in D-106. They have tutors, practice tests, advice about studying, computer drills, and more.

**Textbook Website.** Our textbook has an optional website called <http://www.masteringchemistry.com>. An access code comes with the new textbook. Contact the publisher to buy a code if you bought the textbook used. Although not required, you may use and will benefit from the learning tools on this website.

**Notes Page.** Check this website's "Notes" page often for copies of handouts, exams, answer keys, presentations, and other resources.

*"In every job that must be done, there is an element of fun." - Mary Poppins*

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Calendar - Updated August 20, 2010

## Chemistry 152/152L Fall 2010 Syllabus: Calendar

	Lecture	Laboratory
Mon 8/23	Ch 1,2: Measurements	Check-in, Safety Exp 1: Observations (handout)
Wed 8/25	Ch 2: Unit Conversions	
Mon 8/30	Ch 2: Problem solving	Exp 2: Measurements
Wed 9/1	Ch 2: Complex Conversions	
Mon 9/6	No class today. Enjoy your holiday.	No lab this week. Review session on Wednesday during lab period. Special assignment - TBA.
Wed 9/8	Ch 3: Matter	
Mon 9/13	Ch 3: Energy	Exp 3: Density
Wed 9/15	Ch 12.4/12.5: Phase Changes	
Mon 9/20	Ch 4 Atoms	Exp 5: Calorimetry
Wed 9/22	Exam 1 (Chs 1-4,12)	
Mon 9/27	Ch 9: Electrons	Exp 6: Element Families
Wed 9/29	Ch 9: Electrons, Periodic Trends	
Mon 10/4	Ch 5: Ions, Molecules	Exp 7: Identifying Ions
Wed 10/6	Ch 5: Names	
Mon 10/11	Ch 5: Names	Exp 8: Reactions
Wed 10/13	Ch 7: Reactions	
Mon 10/18	Exam 2 (Chs 5,7,9)	Exp 4: Ternary Mixture
Wed 10/20	Ch 10: Bonding	
Mon 10/25	Ch 10: Molecular Shapes	Exp 11: Molecular Shapes
Wed 10/27	Ch 6: Moles	
Mon 11/1	Ch 6: Composition	Exp 9: Empirical Formulas
Wed 11/3	Ch 8: Stoichiometry	
Mon 11/8	Ch 8: Stoichiometry	Exp 12: Gas Laws ( <i>postlab due next week</i> )
Wed 11/10	Exam 3 (Chs 6,8,10)	
Mon 11/15	Ch 11: Gases	Exp 13: Determining R
Wed 11/17	Ch 11: Gases	
Mon 11/22	No class today. Enjoy your holiday.	No lab today. Enjoy your holiday.
Wed 11/24	No class today. Enjoy your holiday	
Mon 11/29	Ch 13: Solutions	Exp 14: Solutions
Wed 12/1	Ch 13: Solutions	
Mon 12/6	Ch 14: Acids/Bases	Exp 15: Titration
Wed 12/8	Ch 14: Acids/Bases	
Mon 12/13	Review	Check-out, Final Quiz
Wed 12/15	Final Exam (Chs 1-14)	

This is a tentative calendar and may change due to circumstances during the semester. I will do my best to keep to this schedule as closely as possible. Significant changes to this schedule, if any, will be announced in class and posted here.

*"If you're not part of the solution, you're part of the precipitate." - Anonymous chemist*