

**Syllabus
Chemistry 104
Spring 2010**

Instructor: Dr. Laura Cooley
E-Mail: lcooley@ric.edu
Dept. Office: 456-8049

Office: CS207
Phone: 456-9609

Chem 104 is the (exciting) second half of your year of introductory chemistry. In this course, you will be introduced to many more of the ideas that help us describe and explain our chemical world. After learning some more about bonding, you will begin with a study of the interactions between molecules in liquids and solids, and proceed to learn about reaction rates, what “chemical equilibrium” is and how it is achieved by chemical systems. You will learn something about why reactions proceed in the direction they do, and learn how to make a prediction of which way a reaction will go on its way to equilibrium. This semester is packed with new concepts and useful practical chemistry, and I look forward to introducing you to it!

We will cover part of chapter 10 and much of chapters 11 to 17 of the textbook (the same text used last semester: Tro’s *Chemistry: A Molecular Approach*). You will be assigned problems and are expected to *read the book* diligently! I cannot emphasize enough how important it is for you to read the book and *do the assignments*. Most of us learn by doing – there is just no substitute for doing the work.

If you find that you are having trouble understanding something, please come by and see me. I will be in my office during office hours and at many other times as well. I can also be reached by phone, or by email (address given above). The exams and quizzes will be based on lectures, text material, assigned problems, and laboratory work. Quizzes will be given nearly every week, on Friday.

Lecture: M, Tu, Th, F 11:00 – 11:50 pm; CS 128

Office Hours: M, Tu, Th after class, as needed.

Th 1:30-3 W 11-12 F 10:15-11

Also, you can often find me in my office. Come by and see if I am free.

Lab: Section 1 meets Mondays 2-5 pm in CS214 (Instructor – Mrs. Siok).
Section 3 meets Tuesdays 2-5 pm in CS214 (Instructor – Mrs. Siok).
Section 2 meets Wednesdays 2-5 pm in CS 214 (Instructor – Mrs. Kahn).
You must purchase the packet of lab experiments from the bookstore.
It is needed for the first day of lab.

Textbook : *Chemistry: A Molecular Approach* by Nivaldo Tro

Lab experiments are contained in a *lab packet* available at the bookstore as stated above. Lab starts the first day of classes.

Grading:	Laboratory	30%
	3 Hour Exams	39% (13% each)
	Friday quizzes	14% (lowest quiz grade will be dropped)
	Comprehensive Final	17%

Assignments and Solutions:

For every chapter of the book, you will be given an assignment from the textbook the day we begin the chapter. Solutions to these problems will be available to you as pdf files on WebCT, under “Solutions.” Look for files entitled “Chapter X – Solutions.” For most chapters we cover, you will also be given another set of typed-out problems. Some of these problems are assigned as “Special Problems (SP’s)” – (see below, under *Extra Credit*.) You will find solutions to these problems in WebCT under “In-Class and Special Problems, with Solutions.” I do not grade homework, but I must emphasize that it is extremely important that you actually do the homework. I do grade the Special Problems. The nice thing is that your grade on a SP cannot hurt your grade for the course, it can only help you. This is because SP grades are counted as extra credit (see below). You should do all the SP’s, because this gives you important feedback from the teacher (me) and these are problems I obviously think are important for you to know. Quizzes will be given nearly every week and success on them requires practice – that means doing the homework and the SP’s! If homework problems are designated as SP’s, they will be collected and graded for extra credit.

Some of the problems from the homework will be worked out during problem-solving sessions (see *Active Learning*, below). You are expected to participate!

While homework “does not count” for your grade, it certainly does count as far as your ability to succeed in this class. I cannot emphasize enough how important it is for you to read the book and *do the assignments*. Do every special problem as well. Most of us learn by doing – there is just no substitute for doing the work.

Active Learning:

It is *my job* to teach, but it is *your job* to learn. Obviously this teaching-learning business is a two-way street! Much of the time in this course is spent with me at the front of the room and you taking notes. But *several times a week, I will have exercises that require more active participation on your part*. This may include solving problems with classmates, observing demonstrations, writing about what you have observed or learned, or perhaps one of you presenting an interesting problem to the class. Class participation is essential, and I encourage you to take an active role. At times, I will collect the work, grade it and count it towards “special problem points” (see below, under “Extra Credit”) or even as part or all of a quiz.

Extra Credit:

1) Gotcha! Slips. Teachers make mistakes! This is especially true in a course like general chemistry, where there are many calculations. I do make mistakes during lecture, and *I challenge you to find my mistakes!* To “put my money where my mouth is” so to speak, I will give out extra credit (“Gotcha!”) slips to students who catch me making an error. This applies to mistakes on the overhead and mistakes on quizzes or exams. It does not apply to spelling mistakes (sorry!). Each slip is worth a half a point on a quiz (on a scale of 10 points). To receive the extra credit, hand in your *gotcha!* slips at the end of the semester and they will be credited towards a quiz.

2) Special Problem Points: I will be giving out a variety of **special problems** this semester. Some of these will be in-class problems, and some will be taken home. If you do them correctly, you can raise your course average. In the past, students who did them all and did them correctly have been able to raise their grade one “notch” (for example, from C+ to B-). Here is how the system works. Each problem is worth one point. Suppose that by the end of the semester your course average is 77 %. Suppose also that by the end of the semester you have earned 15 *special problem points*. The 15 points will

entitle you to 15 % of the difference between 100 % and your average. Thus, your average will be $77 + 0.15(100-77) = 80.5\%$. Your grade has gone from a C+ to a B-. *Doing the special problems is required when they are given as in-class exercises, and optional for the take-home ones.* I urge you to do all of them, because it is a good way to learn the material and to boost your grade. However, ***whether or not you hand them in, you are still responsible for understanding the answers to all of the special problems.*** I will go over some of these in class and post or give out written answers to others.

Other information:

If you find that you are having trouble understanding something, come by and see me. I will be in my office during office hours and at many other times as well. I can also be reached by email (see top), and I do respond, usually quickly, to emails. Free tutoring is available for students in this course. The tutors are generally upper-level students who know the course material well. In my experience tutors have been quite helpful to students in this course. The tutoring schedule is posted on the tutoring office, Room CS126 as soon as tutors are lined up – the second or third week of the semester.

The material on exams and quizzes will be based on lectures, text material, assigned problems (homework and special problems), and laboratory work. **Quizzes will be given most weeks, on Friday.** At approximately 11:25, I will ask you to sit in rows, with empty seats in between the rows. Once you have moved into this configuration, I will give out the quizzes. This is to ensure everyone does their own work. Looking at another person's quiz is not permitted. If I discover evidence of copying, grades of zero will be given.

It is difficult to schedule make-ups for quizzes or exams in a large class like this. In extenuating circumstances, I will *try* to make such arrangements, if I am informed in advance. If it is not feasible, however, this is my policy: (1) If you miss a quiz, that score will count as the one to be dropped. (2) If you have to miss an hour exam, your final exam will count proportionally more in its place. (3) Missing more than one quiz or hour exam results in a grade of zero for the second absence.

If you find it necessary to withdraw from the course, please see me as soon as possible after you have made that decision. The last day to withdraw without my permission is Friday, April 2nd. By that time, you should have a good idea of how you are doing. I will be giving out midsemester grades Friday, March 12th. If at any time you wish to know how you are doing in the class, you are welcome to come and see me.

Chapter Topics:

Chapter	Topic
10.6-10.8	Hybrid Orbitals, Valence Bond Theory, Introduction to MO Theory
11	Liquids, Solids, and Intermolecular Forces
12	Solutions
13	Chemical Kinetics
14	Chemical Equilibrium
15	Acids and Bases
16	Aqueous Ionic Equilibrium
17	Free Energy and Thermodynamics

Week	Text Chapters	Tentative! Exam Dates
Jan. 25	10 (Sec 10.6 – 10.8)	
Feb 1	10.8 - 11	
Feb 8	11-12	
Feb 15	12	
Feb 22	12-13	Feb 19
Mar 1	13	
Mar 8	13-14	
Mar 15	Spring Break	
Mar 22	14-15	Mar 26
Mar 29	15	
Apr 5	15-16	
Apr 12	16	
Apr 19	16	
Apr 26	17	Apr 30
May 3	17	

The final exam will be cumulative and given during final exam week (May 10-15) at a time yet to be determined.

Formula for success in this course:

1. Read the assigned sections of the text either before coming to class or right after class.
2. If possible, arrive a few minutes early for class so that you can ask questions and benefit from questions asked by other students. Ask questions after class.
3. Always come to class.
4. Pay close attention in class and take good notes.
5. Ask questions in class.
6. Review your notes as soon as possible after class. Make a list of questions.
7. Reread the text as many times as necessary for you to understand what it is you are reading. Make a list of questions.
8. Do the assigned problems at the end of each chapter.
9. Do all the typed-out problems written by the professor.
10. Check your answers with the posted (on WebCT) solutions.
11. Do all the special problems – check solutions.
12. Get to know your classmates, and form study groups.
13. Work on your lab report or study for your lab quiz as soon as possible after completing each lab experiment. Don't wait until the last minute to do this.