

CHE 121: Chemical Principles I

Block 6 2007-2008

Instructor

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West Science 313

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Office hours: MWF 11:00am-noon; T-F 2:00-3:00pm; and by appointment

These office hours are a minimum; feel free to stop by my office anytime

Lab Instructor

Becky Graham, Ph.D.

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More details will be handed out in lab

Quantitative Reasoning Consultant

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Course goals

In this block we will lay the foundation for your study of the chemical sciences. Topics covered include the scientific method; characteristics and transformations of matter, including atomic theory and chemical reactions; an introduction to energy; bonding and shapes of molecules; and how molecules and ions interact with each other. Chemists deal with these topics every day, but these concepts are also crucially important to other branches of science. Together with CHE 122 (which you are encouraged to take!), this course serves as an introduction to many areas of chemistry. In addition to learning these fundamental topics in chemistry, you will further develop your problem solving and laboratory skills.

Texts and other materials

Required:

Chemistry: The Molecular Nature of Matter and Change, 4e, by Silberberg

A scientific calculator (graphing not necessary)

Safety goggles (available in the chemistry stockroom for \$5)

A bound (not spiral) notebook for lab (available in the bookstore)

Optional:

Student Solutions Manual for the text

Student Study Guide for the text

Meeting times, format, and expectations

We will meet each day from 9:00-11:00am and from 12:30-3:00pm on Mondays. Class will be a mixture of lecture and interactive problem solving. Prompt attendance at all class sessions is expected, although attendance will not count specifically in the grade. Active participation in class is expected, and you will get more from the class if you are more involved.

Reading the text more than once is strongly recommended. Ideally, you would read the appropriate sections of the text, we will discuss the material in class, and then you would reread the same sections again. Reading a chemistry text is not like reading a novel; plan to spend a substantial amount of time reading and working example problems.

In addition to the formal meeting times, optional problem solving sessions will be held each day at 8:45am. Among other things, we will discuss homework problems during this time. You will also have lab twice per week, either on Tuesday and Thursday or on Wednesday and Friday. Labs will be taught by Becky Graham and will meet from 12:30-3:00pm on your assigned days.

In addition to the graded assignments listed below, it will be to your great advantage to do and understand the representative problems from the text. These are listed below. I will be happy to discuss these problems in detail, but I will not grade your work. These are for your own benefit; it is essential that you be able to solve problems. Working together on problems is appropriate and even encouraged; science is a collaborative endeavor. However, by exam time each of you should understand all of these problems.

Point distribution and explanation

ECQs, class participation, and group work		30
Quizzes and worksheets	12@10	120
Laboratory	lab grade scaled to:	200
Two midterm exams	2@125	250
<u>Final exam</u>		<u>200</u>
Total		800

End of Class Questions (ECQs): At the end of a class session, I will often ask you to write down one or a few questions you have regarding the material covered so far. We will then often begin the next class session by addressing one or more of these questions. There are no ‘stupid questions.’ The points in this subsection are nothing more than an effort grade.

Quizzes: These will be short, in-class problems to work. When given, quizzes will be at the beginning of class, but they will not necessarily be announced the day before.

Worksheets: These will be in-class activities usually carried out in groups. Each person in the group should turn in a worksheet.

Labs: In addition to the weighting shown above, you must perform satisfactorily in the lab portion of the course to pass the course. More details regarding lab will be handed out later.

Midterm exams: These will cover a specific portion of the course.

Final exam: The final exam will be comprehensive, but the material in the latter portion of the course (since the last midterm exam) will be weighted more heavily to provide balance to all material covered.

Extra credit:

Textbook errors: If you find a legitimate error in the textbook and are the first student to report this error to me in writing, you will receive bonus points. The number of bonus points will be dependent on how many errors the class finds as a whole throughout the entire block. This offer is good for the text only (i.e., not the study guide or student solutions manual).

Exam reworks: It is very beneficial for you to do reworks immediately, and therefore reworks for each midterm exam will be accepted the day after graded exams are returned and no later. Reworks must explain what you did wrong and provide the correct work and answer with an explanation. You must do your reworks on a new sheet of paper and also turn in your original exam exactly as it was returned to you.

Grading

Cutoffs will be no higher than:

A-/B+	720
B-/C+	640
C-/D+	560
D-/F	480

Cutoffs may be lower depending on the difficulty of the exams.

Miscellaneous policies and information

- A tutor is available; please see me for more information. In addition, the College's Quantitative Reasoning Consultant and her office are glad to assist you.
- Students wishing to drop on the 15th day must have faithfully attended and participated in class. This includes labs, ECQs, quizzes, and exams.
- Late work will not be accepted, and makeup quizzes or exams will not be given. If you need to miss class, let me know ahead of time; if the reason is good the assignment in question may be excused at my discretion. Please contact me if you are having difficulty with the course or if a serious sickness/incident occurs during the block.
- Cornell College is committed to providing equal educational opportunities to all students. If you have a documented learning disability and will need any accommodation in this course, you must request the accommodation(s) from me as early as possible and no later than the third day of the term. Additional information about the policies and procedures for accommodation of learning disabilities is available at http://cornellcollege.edu/academic_affairs/disabilities/.
- Any student with a situation which could affect your learning (e.g., health condition, serious family trouble) must contact me by the third day of the term. Student Affairs staff members do not automatically notify faculty members concerning student health issues. You must inform me due to safety concerns—for yourself and others—in the lab.
- As mentioned above, working on problem sets together is appropriate. However, academic and scientific misconduct will be dealt with harshly. Examples include, but are not limited to, 'collaborating' on exams, illegal material stored in your calculator, submitting another's work as your own (including copying from a current or former student's lab notebook), and falsification of lab data. Any question about what is (or is not) appropriate in academia or science should be directed to me. If there is any doubt at all then please ask.

Schedule

The following schedule is tentative; deviations will be announced in class.

Day			Chap.	Topic	Representative Problems
1	M	4 Feb	1	Fundamentals	Ch1: 7,21,28,35,58,79,90
2	T	5 Feb	2	Matter	Ch2: 8,18,28,40,62,111,138
				Math review (1-2pm)	
3	W	6 Feb	3	Stoichiometry	Ch3: 2,3,9,14,25,29,32
				Math review (1-2pm)	
4	R	7 Feb	3	Stoichiometry	Ch3: 38,44,49,56,65,73,127
5	F	8 Feb	4	Chemical reactions	Ch4: 3,16,25,34,48,56,61
6	M	11 Feb	1-4	Exam 1 (9-11am)	
			6	Thermochemistry (12:30-3:00pm)	
7	T	12 Feb	6	Thermochemistry	Ch6: 9,14,36,41,57,69,76
8	W	13 Feb	7	Atomic structure	Ch7: 12,22,32,39,48,60,74
9	R	14 Feb	7,8	Atomic structure, periodic properties	
10	F	15 Feb	8	Periodic properties	Ch8: 6,12,18,26,54,75,107
11	M	18 Feb	9	Chemical bonding	Ch9: 16,23,35,38,48,55,64
12	T	19 Feb	6-9	Exam 2 (9-11am)	
13	W	20 Feb	10	Shapes of molecules	Ch10: 6,10,16,20,26,61,65
14	R	21 Feb	10,11	Shapes, bonding theory	Ch10: 28,31,35,41,51,53,64
15	F	22 Feb	11,12	Bonding theory, IM forces	Ch11: 2,4,8,12,19,20,34
16	M	25 Feb	12,13	Intermolec. forces, mixtures	Ch12: 2,19,39,41,47,80,88
17	T	26 Feb	13	Mixtures	Ch13: 7,12,44,70,90,94,102
18	W	27 Feb	1-4,6-13	Final exam (9am-noon)	