

Lewis & Clark College
General Chemistry I, Chemistry 110, Section 01
Fall, 2007

Basic Information

Professor: Barb Balko; Olin 225; x 7534; balko@lclark.edu

Department Secretary: Linda Noble; Olin 226A; x 7530; noble@lclark.edu

Tentative Office Hours: T 10 – 11 am; W: 12:40 – 1:40 pm; F: 1 – 2 pm; also, by appointment

Lectures: MWF, 10:20 – 11:20, Olin 301

Discussion: M 11:30 – 12:30; M: 3 – 4; T 9:40 – 10:40 or T 1:50 – 2:50; Olin 102

Class Website: www.lclark.edu/~balko/chem110_website.html; some material may be on WebDisk (<http://webdisk.lclark.edu>)

Class Listserver: 07FA-CHEM-110-01@lclark.edu

Help Center: to be announced

Note: You must register for a laboratory and discussion section as well as the lecture. Labs and discussion sections start the **second** week of classes. For lab, please bring your safety goggles and lab notebook and wear closed-toe shoes, long pants or skirt, and a shirt that covers your midriff. For discussion section, please bring your textbook and calculator.

Required Materials

Text: Brown, LeMay, and Bursten, *Chemistry: The Central Science*, 10th edition. This text is available in the college bookstore.

Safety Goggles: These must be worn **at all times** in the laboratory. They can be purchased in the college bookstore.

Laboratory Notebook: This is a bound duplicate notebook with numbered pages; it can be purchased in the college bookstore.

Calculator: This must have log and exponential capabilities.

General Information

Class Goals:

The main goal for this class is to provide you with the basics in the “language” of chemistry. By the end of the class, you should have learned the fundamental chemical “vocabulary” (e.g., H_2O = water; ΔH = heat released by a reaction) as well as much of the “grammar” (e.g., $2\text{C}_8\text{H}_{18} + 25\text{O}_2 \rightarrow 16\text{CO}_2 + 18\text{H}_2\text{O}$; $PV = nRT$). These fundamentals will be used in the second half of this course, as well as in many of your other classes.

The second goal for this class is to gain an appreciation for chemistry. While I don't expect everyone in the class to decide to become a chemistry major, I want each of you to see the importance of chemistry in your field of interest, whether this be

biology, biochemistry, geology, physics, medicine, environmental studies, or even international affairs. Chemistry is called the “Central Science” for a reason!

Course Strategy:

Reading the text, doing all the assigned homework, and coming to class are essential for succeeding in this course. Doing extra problems is especially helpful. I encourage you to form study groups and I can help get these groups together and/or can suggest problems to work on. Don't be afraid to ask questions—there are no stupid questions and I guarantee that someone else has the same questions. In addition to helping you, your questions will help me by making me aware of difficulties that the class is having with the material. Don't hesitate to see me if you're having difficulties!

Lectures:

It is important to read your textbook before coming to class. Use the syllabus to find out what will be covered in lecture and read ahead. When you go home after class, do some problems to see if you can apply what you learned that day. I will often assign problems that we will go over during the next lecture to force you to do this. If you don't understand something, ask questions during lecture or come see me after class or during my office hours.

Office Hours:

If you have questions that cannot be answered in class, would like additional practice problems, would like to talk about the class, or would like to talk about chemistry in general, please see me during my office hours. If these times don't work for you, feel free to make an appointment with me for another time or to talk to the other General Chemistry professor (Anne Bentley, Olin 221) when appropriate.

Discussion Sections:

These sections give you the opportunity to practice what you've been learning in lecture and to challenge your comprehension of the material.

At the start of discussion section, your homework will be returned to you. Students who have gotten problems wrong, will work in groups to correct their work. More problems related to the homework problems will be provided if you feel that you need more practice. Challenge problems will be provided to those students who have a good understanding of the homework.

Laboratory:

The lab is an integral part of the course. This is when you get to put into practice what you've been learning. If a picture is worth a thousand words, a laboratory is worth ten thousand. Plan on attending all your labs as there are no make-ups. Scheduling conflicts due to athletics or illness must be worked out with your lab instructor as soon as possible, preferably before the lab that will be missed.

Read the lab before you arrive! Doing so will likely give you greater experimental success and help you to finish faster.

Class Website:

The class website will feature pdf files of homework assignments and solutions to homework problems and practice tests. There will also be links to other sites that you may find interesting. If the site starts to get full, older files will be moved to WebDisk.

Academic Honesty:

I expect academic honesty. This means homework, labs, and exams should be your own efforts. Discussion about homework assignments and labs is encouraged but the work you turn in should be your own (i.e., it should be in your own words and you should be able to explain it fully if asked). Cheating will result in failure on the assignment, possible failure of the course, and disciplinary action by the College Honor Board. Please consult the *Pathfinder* for more information on the College's academic integrity policy. If you are having problems come see me!

Classroom Disruption:

I expect the classroom to be a comfortable environment for learning. I expect that we support each other as we learn the basics of chemistry. Thus, disruptive class behavior, which is behavior that in my judgment impedes other students' opportunity to learn or interferes with the class goals, is unacceptable. Should such behavior occur, the student will be asked to leave class and I will refer the matter to the director of Academic Advising. Permission to return to class will be granted only after the student meets with the director of Academic Advising and agrees to stop the disruptive behavior. If the disruptive behavior continues, the student will be dropped from the course.

Academic Accommodations:

If you have a disability that may impact your academic performance, you may request accommodations by submitting documentation to the Student Support Services Office in Albany Quadrangle (x7191). That office will notify me of the accommodations for which you are eligible.

Grading

3 "Midterm" Exams	45%
Final	20%
Homework/Discussions/In-class activities	10%
Laboratory	25%

Midterm Exams

Three one hour midterms will be given in class. The *approximate* dates are given in the syllabus.

Final Exam

Your final exam is scheduled for Monday, Dec. 17, 1:00 – 4:00 pm.

Homework/Discussions/In-class activities

Homework will be assigned weekly and will be due at the start of class each Monday. I will check your homework and you will be given a $\checkmark++$, $\checkmark+$, \checkmark , $\checkmark-$, or 0 (equivalent to roughly a 100, 95, 85, 75, or 0, respectively). ***Please box your solutions to make it easier for me to check your work.*** This homework will be handed back in your discussion section, where you will be able to learn what you did wrong and correct your mistakes. I will drop your lowest homework score.

At the start of discussion section, your homework will be returned to you. Students who have gotten problems wrong will work in groups to learn what they did wrong. More problems will be provided for you to work on if you feel that you need more practice on a particular topic. Challenge problems will be provided for those students who have a good understanding of the homework. At the end of the discussion section, each student should show me what they have been working on. As long as you spent the discussion hour concentrating on the material, you will receive a $\checkmark+$ for your efforts. If you spend the discussion time talking off topic or doing work from other classes, you will receive a $\checkmark-$. If you have an unexcused absence, you will receive a zero. There are 14 discussion sections during the semester. Your two lowest discussion grades will be dropped.

Throughout the semester we will have 12 in-class activities for which you will write a short response to hand-in. These responses will be graded ($\checkmark+$, \checkmark , $\checkmark-$, 0 equivalent to roughly a 95, 85, 75, and 0, respectively). I will drop your lowest in-class activity grade.

Laboratory

Your lab instructor will discuss how to prepare your lab reports and how these will be graded.

Tentative Class Schedule

Date	Material Covered	Reading
Wed., Sept. 5	introduction, units, uncertainty, significant figures	1.1 – 1.6
Fri., Sept. 7	atoms, periodic table	2.1 – 2.5
Mon., Sept. 10	molecules, ions	2.6 – 2.7
Wed., Sept. 12	nomenclature	2.8 – 2.9
Fri., Sept. 14	chemical reactions, moles	3.1 – 3.4
Mon., Sept. 17	empirical and molecular formulas	3.5
Wed., Sept. 19	stoichiometric calculations	3.6 – 3.7
Fri., Sept. 21	solutions	4.1, 4.5 – 4.6
Mon., Sept. 24	precipitation reactions, acid-base reactions	4.2 – 4.3
Wed., Sept. 26	Exam 1 (Chapters 1, 2 & 3)	
Fri., Sept. 28	redox reactions	4.4
Mon., Oct. 1	energy, 1 st law of thermodynamics	5.1 – 5.2
Wed., Oct. 3	enthalpy	5.3 – 5.4
Fri., Oct. 5	calorimetry	5.5
Mon., Oct 8	Hess's Law; heats of formation	5.6 – 5.7
Wed., Oct. 10	fuel calculations	5.8
Fri., Oct. 12	Fall Break	
Mon., Oct. 15	light (waves and photons)	6.1 – 6.2
Wed., Oct. 17	wave-particle duality	6.3 – 6.4
Fri., Oct. 19	atomic orbitals	6.5 – 6.7
Mon., Oct. 22	electron configurations	6.8 – 6.9
Wed., Oct. 24	periodic table; effective nuclear charge	7.1 – 7.2
Fri., Oct. 26	periodic trends	7.3 – 7.5
Mon., Oct. 29	Exam 2 (Chapters 4, 5, & 6)	
Wed., Oct. 31	chemical bonds	8.1 – 8.4
Fri., Nov. 2	Lewis structures	8.5 – 8.7
Mon., Nov. 5	bond strength	8.8
Wed., Nov. 7	VSEPR Model	9.1 – 9.3

Fri., Nov. 9	polarity	9.3
Mon., Nov. 12	hybrid orbitals	9.4 – 9.6
Wed., Nov. 14	molecular orbitals	9.7 – 9.8
Fri., Nov. 16	$PV = nRT$	10.1 – 10.4
Mon., Nov. 19	applications of $PV = nRT$	10.5 – 10.6
Wed., Nov. 21	kinetic theory of gases, real gases	10.7 – 10.9
Fri., Nov. 23	Thanksgiving Break	
Mon., Nov. 26	intermolecular forces	11.1 – 11.3
Wed., Nov. 28	Exam 3 (Chapters 7, 8, 9, 10)	
Fri., Nov. 30	phase changes	11.4 – 11.6
Mon., Dec. 3	solubility	13.1 – 13.3
Wed., Dec. 5	concentration	13.4
Fri., Dec. 7	colligative properties	13.5
Mon., Dec. 10	new materials	selections in 12
Wed., Dec. 12	review	
Mon., Dec. 17	Final (1 – 4 pm)	