

General Chemistry I

CHEM 101 Fall Term, 2009

Objectives for CHEM 101-102

- to understand the concept of the atomic and molecular nature of matter and of the chemical reactions that transform matter from one substance to another;
- to develop problem-solving skills in the quantitative areas of chemistry, such as stoichiometry or mass balance, thermochemistry, properties of gases, chemical equilibria, and the rates of chemical reactions;
- to be introduced to elementary experimental chemistry;
- to learn the basis of the physical properties and structure of solids, liquids, and gases and to understand the factors affecting their chemical reactivity.

Lecturers:

- < Dr. D. King, Chemistry Department, Office: Disqué 509 [course coordinator]
Lecture B: Wed., Fri. 12:00-12:50 PM, Disqué 103
- < Dr. A. Addison, Chemistry Department, Office: Disqué 418
Lecture A: Wed., Fri. 9:00-9:50 AM, Disqué 103
Lecture C: Tues., Thurs. 11:00-11:50 AM, Disqué 103
Lecture D: Tues., Thurs. 1:00-1:50 PM, Disqué 103
- < Dr. F. Ji, Chemistry Department, Office: Disqué 507
Lecture E (honors): Tues., Thurs. 2:00-2:50 PM, Disqué 103

First e-mail contact for course inquiries and OWL coordinator:

Dr. Paul Deroo: email: pwd26@drexel.edu

Course Website: [Bb Vista, CHEM 101](#)

You will always find here the most current syllabus (supersedes this version), course schedule and announcements about changes in the course, labs and exams. **Check it regularly.** You can get there through DrexelOne ("My Courses") or directly (<http://learning.drexel.edu>).

1. Required Textbooks and Manuals:

J.W. Moore, C.L. Stanitski, and P.C. Jurs, *Chemistry - The Molecular Science*, 3rd Ed., Thomson/Brooks/Cole, 2007.

The *Online Web-based Learning (OWL)* package is bundled with this textbook at the Drexel Bookstore. It is used for *additional* homework and credit.

Additional software: *CengageNow (or ThomsonNow)* is available online using the ID/Password bundled with the textbook. This is not a required element of the course.

Students are encouraged to purchase a simple scientific calculator for use on exams.

2. Required Laboratory Manual:

E. Thorne, *Laboratory Manual for General Chemistry, Drexel University, CHEM 101/CHEM 102 Academic Year 2009-2010.*

3. Required Supplementary Materials

Each student must purchase an OWL account code either as part of his/her textbook bundle or separately at the Textbook Information desk at the bookstore (a limited number are available, for those who may already possess the textbook). OWL accounts cannot be shared.

Safety glasses or goggles must be worn in the laboratory (available at the bookstore).

A periodic table and other useful information will be provided as part of your test package at the time of the test.

4. Table 1. Grading structure:

Activity	% Grade	Additional Information
Exams	35	Three 50-minute exams will be given starting at 8:00 AM on dates indicated on the course schedule (p. 8). A missed exam can be replaced by the make-up exam or averaged with the recitation grade.
Recitation		A recitation grade will be determined based on both attendance and recitation participation. The recitation grade will be averaged with the lowest exam grade.
OWL assignments	10	
Final Exam	35	You must score at least 45% on the final to pass the course.
Labs	20	You must score at least 55% in lab to pass the course.
Total	100	

Grading policy: students who meet all the requirements will earn an A- if they score at least 90% overall, B- \geq 80%, C- \geq 70%, D \geq 60%. If a question arises about an exam grade, for instance, feel free to contact us with your concerns. Any

questions about final course grades should be raised as soon as possible; don't wait until the Winter Quarter has started. Be aware that the course instructor(s) may contact you via e-mail if there are problems with your final grade or course components.

5. Academic Honesty / Cheating: Students are held to the highest expectations and standards regarding honesty in all aspects of the course, including taking exams and in the preparation of laboratory reports. Cheating, **including misrepresentation of the work of others as your own**, will not be tolerated. **(Understand plagiarism and do not commit it.)** Cases of cheating will be reported to the University and the College of Arts and Sciences. Students caught cheating will receive a failing (F) grade.

6. Lectures: Lectures will be given on topics as indicated on the course schedule (p. 8). Lecturers may call upon students to provide feedback from time to time, but attendance is not mandatory. Some lecture time will be used for review / catch-up during the term. If catch-up is not required, a review will be provided at the discretion of the lecturer. Otherwise, this time may be used to discuss new material. **Not all required material will be covered in lecture.** The course schedule is provided as a guide and will be revised if dictated by prevailing circumstances (e.g., weather, pedagogical purposes ...).

7. Exams: Three, fifty-minute exams will be given as indicated on the course schedule (p. 8). The lowest exam score (including a zero for a missed exam) will be averaged with the Recitation grade. Dates, times and locations of these exams will be posted on the course website. After the commencement of the exam, no student will be allowed to leave the testing room without handing in the exam. Once a student leaves the testing room, he/she will not be allowed to re-enter it for any reason. Students arriving late to the exam, after any other student has left, will not be permitted to take the exam. The exams will consist of multiple-choice questions. **Exams may include questions on lab material.** All students are responsible for bringing to the exam their own operational writing instruments and calculators - no sharing will be allowed. A periodic table, constant values, etc. will be provided as needed. No other materials will be allowed. It generally takes 2-5 school days for grades to be reported back to students. Be aware that active cell phones and the use of random-access devices (e.g., MP3 players, Palm Pilots, iPods) are NOT ALLOWED in exam rooms, and such may be confiscated if they are found.

THERE WILL BE AN OPPORTUNITY TO MAKE UP ONE MISSED EXAM. During the last week of classes, a make-up exam will be given. The exam will cover material not included on a previous exam. To be eligible to take the make-up exam, a student

must submit an application (available on the course website) by 11/27/09 that includes a reasonable explanation for missing the initial exam. Eligible students will be notified by email regarding the date, time and location of the exam. *The make-up exam can only be used to replace a missed exam; it cannot be used to improve a grade on an exam that was taken.* There will be no opportunity to retake the make-up exam, regardless of the reason for missing it.

Athletes who will miss **two** or more exams because of conflicting **events** should contact Dr. King.

8. Final Exam: The final exam will be held during final exam week. The date, locations and start time will be announced in class and posted on the course website. **NO MAKE UP WILL BE GIVEN FOR THE FINAL EXAM. STUDENTS MUST BE PRESENT FOR THE FINAL.** After the commencement of the exam, no student will be allowed to leave the examination room without handing in the exam. Once a student leaves the examination room, he/she will not be allowed to re-enter it for any reason. Students arriving late to the exam, after any other student has left, will not be permitted to take the exam. The exam will consist of multiple-choice questions. There is no penalty for guessing. All students are responsible for bringing to the exam their own operational writing instruments and calculators - no sharing will be allowed. Be aware that active cell phones and the use of random-access devices (e.g., MP3 players, Palm Pilots, iPods) are **NOT ALLOWED** in exam rooms, and such may be confiscated if they are found. **The final exam will cover material from the entire term. A student who does not score at least 45% on the final exam will not pass the course, regardless of his/her prior performance in the course.**

Final Exam Week is Monday, Dec. 7, through Saturday, Dec. 12. Students should expect to be at Drexel the entire week. The final exam will not be rescheduled to accommodate travel plans.

9. Recitations: **The recitation grade will be based on the Recitation Classes. It will be averaged with the lowest exam grade.** There is a 50-minute recitation every week, designed to give you experience in explaining and working problems. Recitation instructors are prepared to answer *any* question in this chemistry course, but priority will be given to those on the current subject matter. The problems assigned are listed on the Course Schedule at the end of this syllabus (p. 8). Recitation grades will be determined based on both participation and attendance. If you cannot attend your regularly scheduled recitation, you should attend another recitation that same week and sign in, with that instructor's permission. You must notify your regular instructor to let him/her know that you attended another

recitation. Recitations scheduled to meet on Mon., Oct. 12 (Columbus Day Holiday), and between 11 AM and 1 PM on Fri., Oct. 2 (Convocation), will be cancelled. These recitations will not be rescheduled. Students are encouraged to attend another recitation that week, but students will not lose points if they do not attend another recitation that week.

It is expected that students in the honors sections will have fewer questions about the conceptual problems assigned for recitation, because they will have a better general understanding of the material presented each week. Consequently, additional problems will be assigned to these sections. These will include problems from the following end-of-chapter sections: "Applying Concepts", "More Challenging Questions" and "Conceptual Challenge Problems". The aim is for honors students to develop a deeper understanding of the chapter concepts and the application of the concepts to novel circumstances. In addition to solving these additional problems, each honor student will be expected to present the solutions to the class in his/her recitation and/or lead a discussion about the problem.

10. Laboratories: The purpose of the laboratory is to supplement the course material. Subject matter not covered in the lecture part of the course will be covered in the lab. Exams may include questions on lab material. The major objective of the lab part of the course is for you to obtain training in the chemical laboratory, in experimental techniques and in recording and reporting of experimental results. You will have a chemistry lab every other week beginning in week 2 for even-numbered lab sections or week 3 for odd-numbered lab sections (please refer to the table below). All laboratory instruction is given in Disqué Hall. *If you are more than 5 minutes late to lab, you will not be permitted to perform the experiment at that time, and must make up the lab at another time.* You are required to submit a **legible, handwritten** Procedure at the beginning of the lab period. This procedure should provide a brief summary of what you will be doing during the lab period. If you do not turn in the procedure, you will still be allowed to complete the lab, but you will forfeit the 5 points associated with that report component; late submissions of the procedure will not be accepted.

If you miss a lab, try to make up the lab in one of the other sections, with that instructor's permission. You must let your regular instructor know that you have made up the lab. Your lab report is due to your **regular** lab instructor one week after the experiment was performed. If you are unable to make up the lab during the two weeks that it is running, you can try to make it up on the lab make-up day, held during the last week of classes. You can make up only **one** experiment in this make-up day. (Due to safety regulations, the number of persons allowed in the lab at one time is limited; you are advised to attend all of your regularly scheduled lab

sessions to ensure that you perform all of the lab exercises.) **To get a passing grade for CHEM 101, you must obtain a cumulative lab grade of 55% or higher.**

Table 2. Laboratory Schedule (see notes on next page)

	Lab 1	Lab 2	Lab 3	Lab 4
Title	Exp. #1 Stoichiometry and Limiting Reagents	Exp. #2 Spectroscopy	Exp. #3 Conductivity of Solutions	Exp. # 4 Determination of Molar Mass by Freezing Point Depression
Even Lab Sect.	Week of September 28 th *	Week of October 12 th *	Week of October 26 th	Week of November 9 th
Odd Lab Sect.	Week of October 5 th	Week of October 19 th	Week of November 2 nd	Week of November 16 th

*Note that labs for sections 64, 66, 68H and 70 will not be held on Monday, Oct. 12th because of the Columbus Day holiday. These labs will instead run on Monday, Oct. 19th. These rescheduled labs will meet in Disqué 313 at the same time as the originally scheduled labs. Similarly, the labs for sections 104 and 106 originally scheduled for Friday, Oct. 2nd (University Convocation) will run on Friday, Oct. 9th. These rescheduled labs will meet in Disqué 313 at the same times as the originally scheduled labs.

11. Submitting Lab Reports: The data sheet from the labs must be signed by your instructor prior to your leaving the lab. The data sheets may be photocopied and shared (with your lab partner only). **For each of the four lab experiences, each student is required to submit an individual lab report.** You may collaborate with your lab partner on the calculations, but the rest of the report must represent your individual work. Any lab reports that are direct copies of each other will receive zero (0) points. Your lab report is due before the building closes on the day one week after you do the lab. You should submit your lab report by placing it in your lab instructor's slot box across from Room 304 Disqué Hall. Ensure that the cover page of your report displays your lab instructor's name as well as the other essential information (your name, course number, section number, exp. title). A blank cover page is available on the course website. Five points will be deducted for each day (not including weekends or holidays) that the report is late. Any report submitted more than two weeks late is worth zero (0) points.

(See page 3 of the Lab Manual for more details.)

12. Safety in the lab: Everyone is required to wear safety glasses or goggles while in the lab. Prescription glasses must be covered with safety goggles unless written documentation is provided to the instructor that indicates that their lenses meet or exceed the ANSI Z87 1-1989 standard and are equipped with side shields. All students must sign a form stating that you understand and will abide by this policy prior to being allowed to work in the lab. It is recommended that a pair of safety glasses is purchased from the Drexel Bookstore prior to coming to the lab.

GENERAL INFORMATION

Disability Services: Students with disabilities who wish to request accommodations and services at Drexel University need to present a current accommodation verification letter ("AVL") to one of the instructors before accommodations can be made. AVL's are issued by the Office of Disability Services ("ODS"); <http://www.drexel.edu/ODS/index.html>.

Any student requesting special testing accommodations must contact Dr. King at least seven (7) days prior to the exam. Accommodations will **not** be made if the AVL is first provided on the day of the exam.

How Will You Learn Chemistry in This Course?

It has been our experience in the past that to do well in this course, you must spend at least two hours on chemistry for every hour you spend in class (three hours is recommended). Focus on successfully completing the homework assignments, but don't ignore the problems at the end of the chapter. The assignments provided should prepare the "average" student to get the average grade. Higher grades require more practice. The more you practice chemistry, for example by solving problems, the more quickly you will be able to get through the easy problems on an exam. One common difference between the "A" student and the average student is that the "A" student gets through the easier problems quickly, and has more time to spend on the challenging problems. There is a tutoring room for additional help, Disqué 519, and the hours it will be staffed will be announced. **More extensive tutoring is available through the Drexel Learning Center (DLC) in the Creese Student Center, Room 050 (215-895-2568).**

In the Course Schedule, sections of the text are listed. You are responsible for all material in these sections whether covered in lecture or not.

Course Schedule

Week	Component	Monday	Tuesday	Wednesday	Thursday	Friday
1	Date	9/21/2009	9/22/2009	9/23/2009	9/24/2009	9/25/2009
	Lecture topic	Review Ch. 1-5		Review Ch. 1-5		
	Recitation	Ch 1: 10,29 <i>Honors</i> : 92; Ch 2: 64,68,92 <i>Honors</i> : 121; Ch 3: 33,114				
	Lab	No lab this week				
2	Date	9/28/2009	9/29/2009	9/30/2009	10/1/2009	10/2/2009
	Lecture topic	Review Ch. 1-5		Review Ch. 1-5		
	Recitation	Ch. 3: <i>Honors</i> 141; Ch 4: 19,112,116 <i>Honors</i> : 118,120; Ch 5: 41,45				
	Lab	Exp. 1, even-numbered sections				
3	Date	10/5/2009	10/6/2009	10/7/2009	10/8/2009	10/9/2009
	Lecture topic	7:1-4 (atomic model)		7:5-8	EXAM 1	
	Recitation	Ch 5: 89,120 <i>Honors</i> 123,CP5.B; Ch 7: 11,15,25				
	Lab	Exp. 1, odd-numbered sections				
4	Date	10/12/2009	10/13/2009	10/14/2009	10/15/2009	10/16/2009
	Lecture topic	NO CLASS	7:11-13 (periodicity)	6:1-3 (thermochem.)		
	Recitation	Ch 7: 31,38,70,83,139 <i>Honors</i> 132,CP7.A				
	Lab	Exp. 2, even-numbered sections except 64, 66, 70, 104, 106				
5	Date	10/19/2009	10/20/2009	10/21/2009	10/22/2009	10/23/2009
	Lecture topic	6:4-7 (thermochem.)		Review		
	Recitation	Ch 7: 97,127 <i>Honors</i> 143,150; Ch 6: 30,53,69,77				
	Lab	Exp. 2, odd-numbered sections and 64, 66, 70, 104, 106				
6	Date	10/26/2009	10/27/2009	10/28/2009	10/29/2009	10/30/2009
	Lecture topic	EXAM 2	6:8-10 (thermochem.)	6:11-12; 8:1-3 (bonding)		
	Recitation	Ch 6: 84,90,119 <i>Honors</i> 139,143a-c; Ch 8: 9,13				
	Lab	Exp. 3, even-numbered sections				
7	Date	11/2/2009	11/3/2009	11/4/2009	11/5/2009	11/6/2009
	Lecture topic	8:4-6 (bonding)		8:7-10 (bonding)		
	Recitation	Ch 8: 17,48,54,82,89 <i>Honors</i> 116,117,119				
	Lab	Exp. 3, odd-numbered sections				
8	Date	11/9/2009	11/10/2009	11/11/2009	11/12/2009	11/13/2009
	Lecture topic	EXAM 3	9:1-2	9:5-6 (molecular struct.)		
	Recitation	Ch 8: 68,93 Ch 9: 13,14,24 <i>Honors</i> 94,101,102				
	Lab	Exp. 4, even-numbered sections				
9	Date	11/16/2009	11/17/2009	11/18/2009	11/19/2009	11/20/2009
	Lecture topic	10:1-4 (gases)		10:5-8 (gases)		
	Recitation	Ch 9: 47,58 Ch 10: 2,18,42,75 <i>Honors</i> 133,135,CP10.B				
	Lab	Exp. 4, odd-numbered sections				
10	Date	11/23/2009	11/24/2009	11/25/2009	11/26/2009	11/27/2009
	Lecture topic	Thanksgiving				
	Recitation	NO CHEM 101 CLASSES TUESDAY-FRIDAY				
	Lab	No labs this week				
11	Date	11/30/2009	12/1/2009	12/2/2009	12/3/2009	12/4/2009
	Lecture topic	10:9-13 (gases)			Review	
	Recitation	Ch 10: 60,105,129 <i>Honors</i> 137,141				
	Lab	MAKE UP LAB				
12	Date	12/7/2009	12/8/2009	12/9/2009	12/10/2009	12/11/2009

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