General Chemistry I
CHEM 101 Fall Term, 2010

Objectives for CHEM 101-102

- to understand the concept of the atomic and molecular nature of matter;
- to understand that chemical reactions transform matter from one substance to another;
- to solve problems in the quantitative areas of chemistry, such as stoichiometry or mass balance, thermochemistry, and properties of gases;
- to be introduced to elementary experimental chemistry;
- to understand the electronic structure of atoms and molecules.

Lecturers:

- Dr. D. King, Chemistry Department, Office: Disqué 509 [course coordinator]
  - Lecture A: Wed., Fri. 9:00-9:50 AM, Disqué 103
  - Lecture B: Wed., Fri. 12:00-12:50 PM, Disqué 103
- Dr. A. Addison, Chemistry Department, Office: Disqué 418
  - Lecture C: Tues., Thurs. 11:00-11:50 AM, Disqué 103
- Dr. P. Deroo, Chemistry Department, Office: Disqué 417
  - Lecture D: Tues., Thurs. 1:00-1:50 PM, Disqué 103
  - Lecture F: Tues., Thurs. 12:00-12:50 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 general course inquiries:

Dr. Daniel King: **email:** daniel.king@drexel.edu

First e-mail contact for OWL inquiries:

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*, 4th Ed., Thomson/Brooks/Cole, 2010.

The *Online Web-based Learning (OWL)* package is bundled with this textbook at the Drexel Bookstore. It is used for *additional* homework and credit.
An electronic version of the textbook with OWL code can be purchased at the following website: http://www.cengagebrain.com/shop/isbn/978-0-538-73817-0
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 2010-2011.*

3. Required Supplementary Materials

Each student must purchase an OWL account code either as part of his/her textbook bundle or separately at the following website:
http://www.cengagebrain.com/shop/en/US/storefront/US?cmd=catProductDetail&ISBN=978-0-495-05099-5. OWL accounts cannot be shared.
Safety glasses or goggles and a lab coat must be worn in the laboratory (both are available at the bookstore).

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

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- ≥ 80%, C- ≥ 70%, D ≥ 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. Some lecture time may 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 11/26/10 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.

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. 6th, through Saturday, Dec. 11th. 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 must attend another recitation that same week and sign in, with that instructor's permission, to earn credit for that week. You also must notify your regular instructor to let him/her

know that you attended another recitation. ***You may only make up three (3) recitations during the term.*** Recitations scheduled to meet on Mon., Oct. 11th (Columbus Day Holiday), and between 10 AM and 1 PM on Tue., Oct. 5th (Convocation), will be cancelled. Students are encouraged to attend another recitation that week, but will not lose points if they do not attend another recitation. The Oct. 11th recitations will be made up on Mon., Nov. 22nd, but the Oct. 5th recitations will not be made up.

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.

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 <u>at the beginning of the lab period</u>. 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 <u>**one**</u> 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 Conductivity of Solutions	Exp. #2 Stoichiometry and Limiting Reagents	Exp. #3 Spectroscopy	Exp. # 4 Determination of Molar Mass by Freezing Point Depression
Even Lab Sect.	Week of September 27th*	Week of October 11th*	Week of October 25th	Week of November 8th
Odd Lab Sect.	Week of October 4th	Week of October 18th	Week of November 1st	Week of November 15th

*Note that labs for sections 64, 66, 68H and 70 will not be held on Monday, Oct. 11th because of the Columbus Day holiday. These labs will instead run on Monday, Oct. 18th. These rescheduled labs will meet in Disqué 302 at the same time as the originally scheduled labs. Similarly, the labs for sections 073 and 075 originally scheduled for Tuesday, Oct. 5th (University Convocation) will run on Tuesday, Sept. 28th. These rescheduled labs will meet in Disqué 302 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 any 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 Disqué 304. 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 homepage. 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, *Matheson 011 A to D*, 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	9/20/2010	9/21/2010	9/22/2010	9/23/2010	9/24/2010
	Lecture topic	Review Ch. 1-5			Review Ch. 1-5	
	Recitation	Ch 1: 29,92 *Honors: 102*; Ch 2: 64,69,92 *Honors: 127*; Ch 3: 41,126				
	Lab	No lab this week				
2	Date	9/27/2010	9/28/2010	9/29/2010	9/30/2010	10/1/2010
	Lecture topic	Review Ch. 1-5			Review Ch. 1-5	
	Recitation	Ch. 3: *Honors 153*; Ch 4: 19,124,125 *Honors: 126*; Ch 5: 45,49				
	Lab	Exp. 1, even-numbered sections and 73, 75				
3	Date	10/4/2010	10/5/2010	10/6/2010	10/7/2010	10/8/2010
	Lecture topic	7:1-3 (atomic model)			7:4-6 (orbitals)	
	Recitation	Ch 5: 95,129 *Honors 130,137*; Ch 7: 11,15,25				
	Lab	Exp. 1, odd-numbered sections except 73, 75				
4	Date	10/11/2010	10/12/2010	10/13/2010	10/14/2010	10/15/2010
	Lecture topic	**NO CLASS**	7:7-8 (orbitals) **EXAM 1**		7:9-12 (periodicity)	
	Recitation	Ch 7: 31,38,70,83,141 *Honors 134,CP7.A*				
	Lab	Exp. 2, even-numbered sections except 64, 66, 68H, 70				
5	Date	10/18/2010	10/19/2010	10/20/2010	10/21/2010	10/22/2010
	Lecture topic	6:1-3 (thermochem.)			6:4-7 (thermochem.)	
	Recitation	Ch 7: 97,127 *Honors 145,152*; Ch 6: 32,59,83,91				
	Lab	Exp. 2, odd-numbered sections and 64, 66, 68H, 70				
6	Date	10/25/2010	10/26/2010	10/27/2010	10/28/2010	10/29/2010
	Lecture topic	6:8-10 (thermo.) **EXAM 2**			6:11-12; 8:1-3 (bonding)	
	Recitation	Ch 6: 101,109,145 *Honors 167,174a-c*; Ch 8: 9,13				
	Lab	Exp. 3, even-numbered sections				
7	Date	11/1/2010	11/2/2010	11/3/2010	11/4/2010	11/5/2010
	Lecture topic	8:4-6 (bonding)			8:7-10 (bonding)	
	Recitation	Ch 8: 17,48,53,82,89 *Honors 121,122,124*				
	Lab	Exp. 3, odd-numbered sections				
8	Date	11/8/2010	11/9/2010	11/10/2010	11/11/2010	11/12/2010
	Lecture topic	9:1-2 (VSEPR) **EXAM 3**			9:5-6 (molecular struct.)	
	Recitation	Ch 8: 68,93 Ch 9: 13,14,24 *Honors 102,109,112*				
	Lab	Exp. 4, even-numbered sections				
9	Date	11/15/2010	11/16/2010	11/17/2010	11/18/2010	11/19/2010
	Lecture topic	10:1-4 (gases)			10:5-8 (gases)	
	Recitation	Ch 9: 51,62 Ch 10: 2,18,42,75 *Honors 133,135,CP10.B*				
	Lab	Exp. 4, odd-numbered sections				
10	Date	11/22/2010	11/23/2010	11/24/2010	11/25/2010	11/26/2010
	Lecture topic	Thanksgiving				
	Recitation	**NO CHEM 101 CLASSES TUESDAY-FRIDAY**				
	Lab	No labs this week				
11	Date	11/29/2010	11/30/2010	12/1/2010	12/2/2010	12/3/2010
	Lecture topic	10:9-13 (gases)			Review	
	Recitation	Ch 10: 60,99,126 *Honors 137,141*				
	Lab	**MAKE UP LAB**				
12	Date	12/6/2010	12/7/2010	12/8/2010	12/9/2010	12/10/2010
		FINAL EXAM WEEK				