

Majors Chemistry II

CHEM 122 Winter Term 2014

Objectives for CHEM 122

- to develop problem-solving skills in the quantitative areas of chemistry, such as thermochemistry, 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.

Lecturer:

- < Dr. Daniel King, Chemistry Department, Office: Disqué 509
- < Lecture: Mon., Wed., Fri. 1:00-1:50 PM, Disqué 108
- < Recitation: Section 001, Wed. 3:00-3:50 AM, Stratton 101
- < Section 002, Thurs. 12:00-12:50 PM, LeBow 134
- < Dr. Monica Ilies, Chemistry Department, Office: Disqué 224
- < Lab: Section 061, Fri. 10:00-11:50 AM, Disqué 404
- < Section 062, Wed. 10:00-11:50 AM, Disqué 404

Course Website: [Bb Learn, CHEM-122-A \(lecture section\)](#)

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 (<https://learn.dcollege.net/>).

1. Required Textbook

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 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 the test.

3. Table 1. Grading structure:

Activity	% Grade	Additional Information
Exams	45	Three 50-minute exams will be given during lecture on the dates indicated on the course schedule (p. 7). A missed exam can be replaced by the make-up exam or averaged with the recitation grade.
Participation		A participation grade will be determined based on attendance and participation in recitation and lecture. See section 7 (p. 3) for grading details. The participation grade will be averaged with the lowest exam grade.
OWL assignments	10	
Labs	20	You must score at least 55% in lab to pass the course.
Final Exam	25	You must score at least 45% on the final to pass the course.
Total	100	

Grading policy: students who meet all the requirements will earn final grades based on the following scale:

A+: 97 - 100

B+: 87 - 89

C+: 77 - 79

D+: 66 - 69

A: 93 - 96

B: 83 - 86

C: 73 - 76

D: 60 - 65

A-: 90 - 92

B-: 80 - 82

C-: 70 - 72

If a question arises about any grade component, feel free to contact your instructor with your concerns. Any questions about final course grades should be raised as soon as possible; don't wait until the Spring Quarter has started.

4. 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.

5. Lectures: Lectures will be given on topics as indicated by the course schedule (p. 7). Supplementary information about chemical applications will be incorporated into the lectures. **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).

6. Recitations: There is a 50-minute recitation every week, designed to give you experience in explaining and working problems. Students will work in groups to complete activities related to that week's content. These activities have a specific format (Process Oriented Guided Inquiry Learning, POGIL) that is expected to improve your understanding of the course material. More information about the format of the POGIL activities will be provided during the first recitation class. Activities will be provided at the start of each recitation. Students who miss a recitation should see the instructor for a copy of the activity.

7. Participation: **The participation grade will be averaged with the lowest exam grade.** There will be two, equally weighted components to your participation grade. (1) Each student will be assigned a personal response device ("clicker") to use this term. Full credit will be given for responses to at least 75% of the questions asked during the course of the term. Your grade will NOT be based on the correctness of your answers; only that you submit an answer. (2) You will receive a grade in recitation based both on attendance and active participation in the classroom discussions.

8. Exams: Three, fifty-minute exams will be given from 1 - 1:50 AM on the dates indicated on the course schedule (p. 7). Room locations of these exams will be announced in class and posted on the course website. The lowest exam score (including a zero for a missed exam) will be averaged with the Participation grade (see section 7). After the start 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 and free-response 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

exam grades to be reported back to students. Be aware that the use of electronic devices other than a calculator (e.g., cell phones, MP3 players, iPods) is NOT ALLOWED in exam rooms, and such devices may be confiscated if they are found. *Be advised that cell phones may not be used as a calculator on exams.*

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 include material covered after the third exam. Students taking the make-up exam will be notified by email regarding the content coverage, date, time and location of the exam. *The make-up exam can only be used to replace one 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.

9. Final Exam: The final exam will be held during final exam week. The date, location 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.** All rules applicable for the in-term exams will also be applicable for the final exam. **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 their prior performance in the course.**

Final Exam Week is Tuesday, Mar. 18, through Saturday, Mar. 22. Students should expect to be at Drexel the entire week. The final exam will not be rescheduled to accommodate travel plans.

10. Laboratories: The purpose of the laboratory is to supplement the course material. Subject matter not covered in the lecture part of the course may be covered in the lab. 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 week beginning in week 1 (please refer to Table 2 below). All laboratory instruction is given in Disqué 404. *If you are more than 5 minutes late to lab or do not have safety glasses and a lab coat, 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. Sometimes you will also have PreLab questions to submit together with your lab procedure. PreLab questions also have points associated. If you do not turn in the procedure and/or PreLab questions, you will still be allowed to complete the lab, but you will forfeit the points associated with that report

component; late submissions of the procedure and/or PreLab questions will not be accepted.

If you miss a lab, try to make up the lab in the other section. If not, you can make it up on the lab make-up day, held during the last week of classes. You can make up only **one** experiment on this make-up day. *The make-up lab day can only be used for experiments that were missed; it cannot be used to improve a lab grade or to redo an experiment where a lab report was not submitted.* **To get a passing grade for CHEM 122, you must obtain a cumulative lab grade of 55% or higher.**

Table 2. Laboratory Schedule

Lab 1 Week of January 6 th	Lab 2 Week of January 13 th	Lab 3 Week of January 20 th	Lab 4 Week of January 27 th	Lab 5 Week of February 3 rd
Using Excel to Graph Chemistry Laboratory Data	Kinetics of Alcohol Oxidation (Exp. 6)	Chemical Equilibrium: Le Chatelier's Principle	Determination of Molar Mass by Freezing Point Depression (Exp. 4)	Acids and Bases - Computer lab
Lab 6 Week of February 10 th	Lab 7 Week of February 17 th	Lab 8 Week of February 24 th	Lab 9 Week of March 3 rd	March 11 th
Acids & Bases (Exp. 7)	Buffer Systems: Preparation and Buffer Capacity	Determination of the Solubility Product Constant	Electrochemical Cells (Exp. 8)	Make-up Lab

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 lab experiences, each student is required to submit an individual lab report or answers to PostLab questions.** You may collaborate with your lab partner on the calculations, but the rest of the report or questions must represent your individual work. Any lab reports or PostLab questions that are direct copies of each other will receive zero (0) points. The lab report or PostLab questions is/are due at the next meeting time (one week after you do the lab). Ensure that the cover page of your report displays your name, course number, section number, experiment 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.*

12. Safety in the lab: Everyone is required to wear safety glasses or goggles and a lab coat 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 required that safety glasses and a lab coat are purchased prior to coming to the lab. Active cell phones are **not allowed** in 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 per class hour is recommended). Focus on successfully completing the online homework assignments, but don't ignore the problems at the end of the chapter. 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. **In addition to office hours, there is a tutoring room for extra help, Stratton 106, and the hours it will be staffed will be announced by the end of week 1.** Additional help is available through the Drexel Learning Center (DLC) in the Creese Student Center, Room 050 (215-895-2568).

Course Schedule

Week	Component	Monday	Tuesday	Wednesday	Thursday	Friday
1	Date	1/6/2014	1/7/2014	1/8/2014	1/9/2014	1/10/2014
	Lecture (phys. prop.)	11:1-2		11:3		11:4-7,9-10
	Recitation		POGIL activity 1 (phase diagrams)			
	Lab		Lab 1			
2	Date	1/13/2014	1/14/2014	1/15/2014	1/16/2014	1/17/2014
	Lecture (kinetics)	5:6; 13:1-2		13:3		13:3-4
	Recitation		POGIL activity 2 (kinetics)			
	Lab		Lab 2			
3	Date	1/20/2014	1/21/2014	1/22/2014	1/23/2014	1/24/2014
	Lecture (kinetics)	No Classes		13:5-7		13:8-9; 14.1
	Recitation		POGIL activity 3 (kinetics)			
	Lab		Lab 3			
4	Date	1/27/2014	1/28/2014	1/29/2014	1/30/2014	1/31/2014
	Lecture (equilibrium)	EXAM 1		14:2		14:3-5
	Recitation		POGIL activity 4 (equilibrium)			
	Lab		Lab 4			
5	Date	2/3/2014	2/4/2014	2/5/2014	2/6/2014	2/7/2014
	Lecture (equilibrium, solutions)	14:6-8		15:1-2		15:3-5
	Recitation		POGIL activity 5 (solubility)			
	Lab		Lab 5			
6	Date	2/10/2014	2/11/2014	2/12/2014	2/13/2014	2/14/2014
	Lecture (acid/base)	EXAM 2		16:1-2		16:3-5
	Recitation		POGIL activity 6 (acids and bases)			
	Lab		Lab 6			
7	Date	2/17/2014	2/18/2014	2/19/2014	2/20/2014	2/21/2014
	Lecture (acid/base)	16:5		16:6-7		16:9; 17:1
	Recitation		POGIL activity 7 (buffers)			
	Lab		Lab 7			
8	Date	2/24/2014	2/25/2014	2/26/2014	2/27/2014	2/28/2014
	Lecture (solubility, thermodynamics)	EXAM 3		17:2-4		17:5-6; 18:1-3
	Recitation		POGIL activity 8 (solubility product)			
	Lab		Lab 8			
9	Date	3/3/2014	3/4/2014	3/5/2014	3/6/2014	3/7/2014
	Lecture (thermo, redox)	18:4-6		18:6-7		18:7; 19:1
	Recitation		POGIL activity 9 (free energy)			
	Lab		Lab 9			
10	Date	3/10/2014	3/11/2014	3/12/2014	3/13/2014	3/14/2014
	Lecture (electrochem)	19:2-4		19:5-7		19:9-12
	Recitation		POGIL activity 10 (electrochemistry)			
	Lab		Tues., 3/11, is the make-up day for missed labs.			
11	Date	3/17/2014	3/18/2014	3/19/2014	3/20/2014	3/21/2014
	Lecture	Review				
	Recitation	FINAL EXAM WEEK (Tues - Sat)				