

CHEM 121 (Majors Chemistry I)

Fall 2013

Course components:

CHEM 121 is the first of a **three-quarter sequence of introductory courses in general chemistry for freshmen chemistry majors**. This course has four components: **1)** lecture; **2)** Online Web-based Learning (OWL); **3)** recitation; and **4)** laboratory.

1) Lectures offer a broad overview of general chemistry fundamentals with special emphasis on their industrial, pharmaceutical and medical applications.

2) OWL provides solid training in solving general chemistry problems with the aim of developing (or just reinforcing) analytical thought and math skills.

3) Recitation gives students experience in solving more applicative problems through inquiry-based teaching, as well as in presenting scientific material in front of an informed audience by Power Point presentations.

4) The weekly laboratory part ensures training in basic experimental techniques, in recording, reporting, and analyzing experimental results, as well as in working in the specific environment of a chemical laboratory.

Objectives:

At the end of the course, students should be able to:

- answer conceptual questions in chemistry topics, such as electronic structure of atoms and molecules; properties of elements and compounds; major types of chemical reactions; chemical bonding; and basic nuclear chemistry;
- solve quantitative problems related to stoichiometry; thermochemistry; and laws of gases;
- use chemical terminology and units of measures correctly;
- run elementary experiments and interpret experimental data;
- develop computational chemical data-processing skills (e.g. use of Microsoft Word, Excel), as well as scientific oral and written communication skills specifically applied to chemistry.

Lecturer:

Dr. **Monica Ilies**, Chemistry Department, **Office:** Disque 224

Lecture: Mon, Wed, Fri: 10:00-10:50 AM; Randel 326

Office hours: Mon, 11:00-1:00 PM or by appointment

First e-mail contact for general course inquiries:

Dr. Monica Ilies: mi73@drexel.edu

First e-mail contact for OWL inquiries:

Dr. Paul Deroo: pwd26@drexel.edu

First e-mail contact for laboratory inquiries:

Dr. Susan Rutkowsky: sg92n2wh@drexel.edu

Course Website: <http://learn.dcollege.net>.

Note: Most of our communication will be via e-mail and via the course website. **Please check regularly the course website and your Drexel email account.**

Required Textbooks and Manuals:

Note: Please read the CHEM 121 welcome e-mail for instructions about how to purchase course materials. The welcome e-mail is also posted on the course website in case you did not receive it.

a) Textbook:

J.W. Moore, C.L. Stanitski, and P.C. Jurs, *Chemistry - The Molecular Science*, 4th Ed., Thomson/Brooks/Cole, 2010.

b) Laboratory Manual:

M. Ilies, E.J. Thorne, and S.A. Rutkowsky - *Laboratory Manual CHEM 121 General Chemistry*, Drexel University, Academic Year 2013-2014.

c) Supplementary Materials

a) OWL (24 months) account code, either as part of the textbook bundle OR purchased separately at the following website:

<http://www.cengagebrain.com/shop/en/US/storefront/US?cmd=catProductDetail&ISBN=978-0-495-05099-5>

Notes:

a₁) OWL accounts cannot be shared or reused.

a₂) Since all course materials will be used for CHEM 121 and CHEM 122 courses to be offered in the Fall and Winter Terms of 2013-2014, you **CANNOT** buy the 6-month version of the OWL because it will expire before the end of the Winter term. **Do not lose the OWL access card, or you will be required to purchase a new code to replace it.**

b) A **simple scientific calculator** for use in labs and exams.

Note: A periodic table will be provided as part of your test package at the time of each exam.

c) A pair of **safety glasses or goggles** and a **lab coat** that **must** be worn **at all times** in the laboratory.

1. Grading structure:

Activity	% Grade	Additional Information
In-term Exams	30	Please see section 3.
Final Exam	25	Please see section 4.
Labs	20	Please see section 5.
Recitation	10	Please see section 6.
OWL Assignments	10	Please see section 7.
Participation	5	Please see section 8.
Total	100	

Grading policy:

Exams are based on lecture material. Students who meet all the requirements will earn an **A+** if they score **97-100**; **A** if **93-96**; **A-** if **90-92**; **B+** if **87-89**; **B** if **83-86**; **B-** if **80-82**; **C+** if **77-79**; **C** if **73-76**; **C-** if **70-72**; **D+** if **66-69**; **D** if **60-65**. There is no **D-** in this course. Please feel free to contact me for any question(s) about an exam grade. **Extra credit may be given to students who participate actively during lectures.**

2. Lectures:

Lectures will be given on topics and sections of the text listed in the Course Schedule (see p. 7) and will be interactive. Some of the subject matter not covered in lecture will be covered in lab. Some of the lecture material will be posted to the course website, while some things will be discussed only in class. Therefore, **constant attendance in lectures is highly recommended. Not all required material will be covered in lecture.** You are responsible for all material in the sections of the text listed on the Course Schedule, whether covered in lecture or not. The Course Schedule is provided as a guide and will be revised if dictated by prevailing circumstances (e.g., pedagogical purposes; level of students' knowledge, etc.). **Cell phone use is disruptive to the classroom environment; hence instructors have the right to prohibit it during class.**

3. In-term exams: non-cumulative

Two, 50 min exams will be given **during lecture time**, on the dates **indicated in the Course Schedule** (see p. 7). Each in-term exam will consist of about **25 questions**. Questions will be a mixture of essay questions and multiple-choice questions. **Exams may include questions on lab material. The average of the two exams will represent 30% of the final grade** for the course.

After the exam starts, 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. All students are responsible for bringing to the exam their own operational writing instruments and calculators - **no sharing will be allowed.** A periodic table and values of important constants 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.

Active cell phones and the use of random-access devices (e.g., MP3 players, tablets, iPods) are NOT ALLOWED in exam rooms. Cell phones MAY NOT be used as a calculator on exams.

There will be an opportunity during the last week of classes to make up **ONLY ONE missed exam.** The make-up exam will include material covered after the second exam and will be taken at the same time by all students who are eligible to take it. To be eligible to take the make-up exam, a student must **e-mail me with 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, NOT 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.

4. Final exam: cumulative

The final exam will be a **2 hrs exam** held during the final exams week. The date, location and start time will be set by the University, announced in class, and posted to the course website. The final exam will consist of about **45 multiple-choice questions** and represents **25% of your final grade**. 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.

All rules mentioned in Section 3 apply to the final exam, too. There is NO MAKE UP FOR THE FINAL EXAM. Students MUST be present for the final.

Final Exam Week is Mon, Dec. 9 – Sat, Dec. 14. Students should expect to be at Drexel the entire week. The final exam will NOT be rescheduled to accommodate travel plans.

5. Laboratories:

All laboratory instruction is given in **Disqué 404**. There is a **lab weekly**, as indicated below:

Laboratory Schedule

Lab 1	Lab 2	Lab 3	Lab 4	Lab 5
Using Excel to Graph Chemistry Laboratory Data (I) Data Report	Preparation of Solutions of Different Concentrations Data Report	Stoichiometry and Limiting Reagents Lab Report	Gravimetric Determination of Phosphorus in Plant Food Data Report	Emission Spectroscopy Lab Report
Lab 6	Lab 7	Lab 8	Lab 9	Lab 10
Conductivity of Solutions Lab Report	Calorimetry Data Report	Properties of Gases Lab Report	Determining the Half-Life of an Isotope Data Report	Make-up Lab

For each lab experiment, each student is required to submit either a Data Report or a Lab Report, as indicated in the schedule above. You have detailed instructions about how to write reports at the end of each experiment in your lab manual. All reports are due **one week after you do the lab** (you hand them in at the beginning of your each next class). The average of the scores for all reports **must be at least 55% to pass the course.**

You are required to submit a **legible, handwritten** procedure **at the beginning of each lab**, which is worth **5 points** of your report grade. This procedure should be a brief summary of the experimental procedure in your lab manual (write it as steps, with bullets). If you do not hand in the procedure, you will still be allowed to complete the lab, but you will lose the 5 points associated with that report component. **Late submissions of the procedure will not be accepted. The handwritten lab procedures will be signed by the instructor, and then attached to your report when you hand it in the following week.**

The **cover page** of your report **must** display: **your name and the name of your instructor**; course number; **lab section number**; and the title of the experiment. A **blank cover page** is available on the **course homepage**

Data sheets must be attached to the corresponding lab reports and **must be signed by the instructor prior to you leaving the lab**. The data sheets **may be shared with your lab partner only!**

You may collaborate with lab partners on the calculations, but the rest of the report must represent your individual work (see PLAGIARISM policy at the beginning of your lab manual). **Any lab reports that are full or partial copies of any other source will receive zero (0) points.** Five points will be deducted for each day (NOT including weekends or holidays) that the lab report is late. Lab reports submitted more than 2 weeks late will NOT be accepted. Failure to submit the lab report after performing an experiment will result in not more than 20 points score for that lab (15 points for the signed data sheet + 5 points for the handwritten lab procedure).

Everyone MUST wear a lab coat and 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 the lenses meet or exceed the ANSI Z87 1-1989 standard and are equipped with side shields. **Shorts or open-toed shoes are NOT ALLOWED.** 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.

If you are more than 5 minutes late to lab, you will NOT be permitted to perform the experiment at that time. If you miss a lab, try to make up that lab in one of the other sections. If you are unable to make up the missed lab, you must make up the lab during the make-up lab week (see p. 7). You can make up ONLY ONE experiment during the make-up lab week. Therefore, you are strongly advised to attend all of your regularly scheduled lab sessions.

Note: The make-up lab day can **ONLY** be used for experiments that were missed, NOT to improve a lab grade OR to redo an experiment where a report was never submitted.

6. Recitations:

There is a **50 min Recitation** weekly. Students are expected to solve the **problems assigned for Recitation** (listed in the **Course Schedule** - see p. 7) **before** coming to class. The **Recitation grade** will be determined based on both **participation and attendance** to the Recitation Classes and it will represent **10% of your final grade**. Since there are 10 Recitations, **each missed recitation** will translate into **10 points lost**. **Well-above average participation** (i.e., much more than the rest of the classmates) **may compensate for 1-2 missed recitations**. **Problems that are indicated in parenthesis will be solved in class only if time permits.** **For each recitation following the first one, 1 or 2 students will be assigned to make a 10-15 minutes Power Point presentation on the topics indicated in the Course Schedule (p. 7).** Students will receive their presentation assignments during the first recitation.

Note: Recitations scheduled to meet on **Tue, Oct. 22 (Convocation)**, will be **cancelled** and **will not be made up**. Students are encouraged to attend another recitation that week, but will **not** lose points if they do not attend another recitation.

7. OWL:

Do **NOT** register for OWL **before** reading the **OWL Instructions email** sent to you right after the Welcome e-mail!

8. Participation:

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 on their submission. **Students may receive extra credit for active participation in classroom discussions.**

9. Academic Honesty and/or 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 reports. Cheating, **including misrepresentation of the work of others as your own**, will not be tolerated. **Please understand plagiarism and do NOT commit it.** Cases of cheating will be reported to the College of Arts and Sciences and the University. **Students caught cheating will receive a failing (F) grade** for the assignment and/or course.

For more information, see material in “Academic Dishonesty” under the “Academic Policies” tab at the following link: http://drexel.edu/studentaffairs/community_standards/studentHandbook/

10. Disability Services:

Students with disabilities should see material under the “Health and Disability Services” tab at the following link: http://drexel.edu/studentaffairs/community_standards/studentHandbook/

Students with disabilities who wish to request special accommodations 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. Ilies 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). However, the exact time of study needed to be successful really depends on your previous background and personal style of study. We recommend focusing on successfully completing the homework assignments, but don't ignore the extra questions 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 faster you will be able to get through the easy problems on an exam and thus have more time to think about the more difficult ones.

There is **free tutoring** (no appointment necessary) available for additional help in **Stratton 106**, at the following times: **Mon and Fri, 9:00 AM - 1:00 PM; Wed, 1:00-6:00 PM; Thu, 9:00 AM - 4:00 PM.** Help on how to study is also available through the **Drexel Learning Center (DLC), in Creese Student Center, Rm 050** (Phone: 215-895-2568).

~ We wish you much success for the Fall term '13 at Drexel ! ~

Drexel CHEM 121 Teaching Team

Course Schedule

Week	Component	Monday	Tuesday	Wednesday	Thursday	Friday
1	Date	9/23/2013	9/24/2013	9/25/2013	9/26/2013	9/27/2013
	Chapters	1.1-1.4		1.5-1.9		2.1-2.4
	Recitation	Ch 1: 13, 30, 58, 75, 84		Ch 2: 25, 51, 53		
	Lab	Using Excel to Graph Chemistry Laboratory Data (I)				
2	Date	9/30/2013	10/1/2013	10/2/2013	10/3/2013	10/4/2013
	Chapters	2.5-2.9; 3.11		3.1-3.2; 3.8-3.10		3.5-3.7
	Recitation	PPT: "Lecture 3 - summary"		Ch 3: 41, 110, 126, 141		
	Lab	Preparation of Solutions of Different Concentrations				
3	Date	10/7/2013	10/8/2013	10/9/2013	10/10/2013	10/11/2013
	Chapters	4.1-4.4		4.5-4.7		5.1; 5.3-5.5
	Recitation	PPT: "How Does a Mass Spectrometer Work?" (p. 56)		Ch 4: 15, 73, 125 (126)		
	Lab	Stoichiometry and Limiting Reagents				
4	Date	10/14/2013	10/15/2013	10/16/2013	10/17/2013	10/18/2013
	Chapters	NO CLASS		7.1-7.4		EXAM 1
	Recitation	PPT: "How Much CO ₂ Is Produced by Your Car?" (p. 137)		Ch 5: 45, 49, 95, 129 (130)		
	Lab	Gravimetric Determination of Phosphorus in Plant Food				
5	Date	10/21/2013	10/22/2013	10/23/2013	10/24/2013	10/25/2013
	Chapters	7.5-7.6		7.7-7.8		7.9-7.13
	Recitation	PPT: "Lecture 11 - summary"		Ch 7: 15, 25, 54, 70, 83 (127, 141)		
	Lab	Spectroscopy				
6	Date	10/28/2013	10/29/2013	10/30/2013	10/31/2013	11/1/2013
	Chapters	6.1-6.4		6.5-6.7		6.8-6.10
	Recitation	PPT: "Chemical Fuels for Home and Industry" (Ch. 6.11)		Ch 6: 30, 32, 83, 92 (103, 145)		
	Lab	Conductivity of Solutions				
7	Date	11/4/2013	11/5/2013	11/6/2013	11/7/2013	11/8/2013
	Chapters	8.1-8.2; 8.4		8.6-8.8		8.9-8.10; 9.1-9.2
	Recitation	PPT: "Foods: Fuels for Our Bodies" (Ch. 6.12)		Ch 8: 48, 55, 68 (93)		
	Lab	Calorimetry				
8	Date	11/11/2013	11/12/2013	11/13/2013	11/14/2013	11/15/2013
	Chapters	9.3-9.4		9.5-9.6		EXAM 2
	Recitation	PPT: "Self-Darkening Eyeglasses" (p. 356)		Ch 9: 13, 14, 51, 64 (66)		
	Lab	Properties of Gases				
9	Date	11/18/2013	11/19/2013	11/20/2013	11/21/2013	11/22/2013
	Chapters	10.2-10.4		10.5-10.7		10.8; 10.11
	Recitation	PPT: "IR and UV-Vis Spectroscopy" (p. 386-387; 401)		Ch 10: 17, 18, 42, 50		
	Lab	Determining the Half-Life of an Isotope				
10	Date	11/25/2013	11/26/2013	11/27/2013	11/28/2013	11/29/2013
	Chapters	20.1-20.2	NO CHEM 121 CLASSES TUESDAY-FRIDAY			
11	Date	12/2/2013	12/3/2013	12/4/2013	12/5/2013	12/6/2013
	Chapters	20.3-20.4		20.5-20.7		20.8-20.9
	Recitation	PPT: "Most Interesting Topics in CHEM 121"		Ch. 20: 45, 53, 57, 65		
	Lab	MAKE UP LAB WEEK				
12	Date	12/9/2013	12/10/2013	12/11/2013	12/12/2013	12/13/2013
		FINAL EXAM WEEK (12/9-12/14)				