

General Chemistry I (CHEM 101)

Fall Quarter, 2014

Course components:

1) lecture; 2) online homework (MasteringChemistry); 3) recitation; and 4) laboratory.

Objectives:

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

- understand that chemical reactions transform matter from one substance to another;
- answer qualitative questions about foundational chemistry topics, such as the electronic structure of atoms and molecules, properties of elements and compounds, and chemical bonding;
- solve quantitative problems involving chemistry topics, such as stoichiometry, thermochemistry, and properties of gases;
- use chemical terminology and units of measures correctly;
- run elementary chemistry experiments and interpret experimental data using appropriate software tools.

Lecturers:

- Dr. **Monica Ilies**; Chemistry Department; Office: Disqué 224 [course coordinator]
 - Lecture D: Tue, Thu; 13:00-13:50 PM; Disqué 103
- Dr. **Anthony Addison**; Chemistry Department; Office: Disqué 418
 - Lecture C: Tue, Thu; 11:00-11:50 PM; Disqué 103
- Dr. **Lee Hoffman**; Chemistry Department; Office: Disqué 403
 - Lecture E (Honors): Tue, Thu; 12:00-12:50 PM; Disqué 103
- Dr. **Daniel King**; Chemistry Department; Office: Disqué 509
 - Lecture A: Wed, Fri; 9:00-9:50 AM; Disqué 103
 - Lecture B: Wed, Fri; 12:00-12:50 AM; Disqué 103
- Dr. **Susan Rutkowsky**; Chemistry Department; Office: Disqué 412
 - Lecture F: Tue, Thu; 12:00-12:50 PM; Disqué 103

First e-mail contact for general course inquiries:

Dr. Monica Ilies: mi73@drexel.edu

First e-mail contact for MasteringChemistry inquiries:

Dr. Paul Deroo: pwd26@drexel.edu

First e-mail contact for laboratory and recitation inquiries:

Please see the contact information for the corresponding instructors (posted to the course website).

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

Note: Most of our communication will be by e-mail and via the course website. **Please check the course website and your Drexel e-mail account regularly. Make sure your Drexel e-mail account is set up correctly (see the instructions in the Welcome e-mail).**

Required Course Materials:

Note: Please read the CHEM 101 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.

Textbook:

Nivaldo Tro, *Chemistry: Structure and Properties*, Pearson, Ed: 2015.

Laboratory Manual:

E. Thorne, *Laboratory Manual for General Chemistry, Drexel University, CHEM 101/CHEM 102 Academic Year 2014-2015*.

Supplementary Materials

a) **MasteringChemistry access code**, either as part of the textbook bundle OR purchased separately.

Notes:

a₁) MasteringChemistry access codes cannot be shared or reused and are valid for 24 months.

a₂) **Do not lose the 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 and the values for constants 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.

All course materials will be used for CHEM 101 and CHEM 102 courses to be offered in the Fall, Winter, Spring, and Summer Terms of 2014-2015.

1. Grading Structure:

Activity	% Grade	Additional Information
Exams	35	See section 3.
Final Exam	25	See section 4.
MasteringChemistry Assignments	10	Do NOT register for MasteringChemistry before reading the instructions sent to you with the Welcome e-mail.
Recitation	10	See section 5.
Lab	20	See section 6.
Total	100	

Grading policy:

Exact grade boundaries will be determined at the end of the term. As a general criterion, students who meet all the requirements will earn grades in the following ranges: **A- to A+** if they score **at least 90%** overall; **B- to B+** if their final score $\geq 80\%$; **C- to C+** if final score $\geq 70\%$; **D to D+** if final score $\geq 60\%$. **There is no D- and no rounding** in this course. Questions about final grades should be raised as soon as possible. **Please feel free to contact your corresponding instructors for any questions about your grades.** The course instructor(s) may contact you via e-mail if there are problems with your grades.

2. Lectures:

Lectures will be given on topics and sections of the text listed in the Course Schedule (see **p. 8**). 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

Three, 50 min exams will be given as **indicated in the Course Schedule** (see **p. 8**). Each in-term exam will consist of about **25 multiple-choice questions. Exams may include questions on lab material. The average of the three in-term exams** will represent **35% 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 third 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 Dr. Ilies by 11/25/14 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 **a) does NOT score at least 45 on the final exam AND b) also received a failing grade on one of the in-term exams 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. 8th – Sat, Dec. 13th. Students should expect to be at Drexel the entire week. The final exam will NOT be rescheduled to accommodate travel plans.

5. Recitations:

Recitations are designed to give you experience in explaining and working problems. The recitation instructors are prepared to answer *any* questions in this chemistry course, but priority will be given to those on the current subject matter. Students are expected to solve the **problems assigned for Recitation** (listed in the **Course Schedule** - see p. 8) **before** coming to class. It is also expected that **students in the honors sections** will have fewer questions about the regular problems assigned for recitation, since they are supposed to have a better background for a deeper understanding of the material presented each week. Consequently, **additional problems** with a higher degree of difficulty are assigned to these sections. The aim is for honors students to develop specific critical thinking skills.

Recitation grades will be determined based on both **participation and attendance**. Since there are 10 Recitations, **each missed recitation** will translate into **10 points lost** (5 points for attendance and 5 points for participation). 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 must notify your regular instructor to let him/her know that you attended another recitation. You may only make up 3 recitations during the term.**

Note: Recitations scheduled to meet between **10 AM and 1 PM on Tue, Oct. 7th (Convocation)** and during **Mon, Oct. 13th (Columbus Day Holiday)** will be **cancelled**. The **Oct. 13th recitations will be made up on Mon, Nov. 25th, but the Oct. 7th recitations 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.

6. Laboratories:

Laboratory supplements the course material by offering you training in basic experimental techniques, as well as 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** (see the **Laboratory Schedule** on the next page).

Laboratory Schedule: Disque Hall (see Notes below for exceptions)

	Lab 1	Lab 2	Lab 3	Lab 4
Title	Exp. #1 Spectroscopy	Exp. #2 Conductivity of Solutions	Exp. #3 Stoichiometry and Limiting Reagents	Exp. # 4 Determination of Molar Mass by Freezing Point Depression
Even Number Lab Sect.	Week of September 29 th	Week of October 13 ^{th*}	Week of October 27 th	Week of November 10 th
Odd Number Lab Sect.	Week of October 6 th	Week of October 20 ^{th*}	Week of November 3 rd	Week of November 17 th

***Notes:** a) Labs for sections **64H, 66, 68H, and 70** will **NOT** run on **Mon, Oct. 13th** (Columbus Day holiday). These labs will instead run on **Mon, Oct. 20th**, in **Disqué 302**, at the same time as the **originally scheduled labs**.

b) Labs for sections **73, 75 and 125** will **NOT** run on **Tue, Oct. 7th** (Convocation). These rescheduled labs will run on **Tue, Nov 25th**, at their **regular times and rooms**.

For each lab experiment, each student is required to submit an individual lab report. The average of the scores for all lab reports **must be at least 55% to pass the course**. If you are retaking CHEM 101, you may be able to use the lab grade you earned during the previous term. You **must** contact the course coordinator to determine if you are eligible to take advantage of this opportunity.

Lab reports are due **one week after you do the lab** (same day, before the building closes at 10 PM). You should submit your lab report by placing it in your **lab instructor's slot box** (across from Disqué 304 - see the yellow sign on the mail slot furniture, in the hallway, near the entrance to the Chemistry Office). Ensure that the **cover page** of your report displays: **your name and the name of your instructor**; course number; **lab section number**; and the title of the experiment. A **blank cover page** and **grading rubrics** are available on the **course homepage** in the "**Lab Reports Info**" folder. To write lab reports, **use the corresponding grading rubrics** and **all the additional information** given in the "**Treatment of the Data**" section for each experiment in your lab manual.

You are required to submit a **legible, handwritten** procedure **at the beginning of each lab**, which is worth **5 points** of your lab 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 lab report when you hand it in the following week.**

Data sheets must be attached to the corresponding lab reports and **must be signed by the instructor prior to your leaving the lab**. 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. **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 long-sleeve 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. **Bare legs (i.e., shorts or short skirts/dresses) 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. 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.

Notes: 1) Make-up labs DO NOT run in the same room or at the same time as your regular labs. You will be informed about the location of the make-up labs during lectures and through the course website.

2) 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 lab report was never submitted.

7. 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 laboratory 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/

8. 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>.

Once submitted, the AVL letter is valid for all exams, including the final exam. 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, and then going through the self-assessment quizzes at the end of each chapter. These quizzes are actually extra practice exams. Also, don't ignore the solved examples in the textbook, as well as the extra questions at the end of each 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.

Starting week 2, there is free tutoring (**no appointment necessary**) available for additional help in **Stratton 106. Tutoring hours will be announced during the first week of the term.**

~ We wish you much success for the Fall term '14 at Drexel! ~

Drexel CHEM 101 Teaching Team

Course Schedule

Week	Component	Monday	Tuesday	Wednesday	Thursday	Friday
1	Date	9/22/2014	9/23/2014	9/24/2014	9/25/2014	9/26/2014
	Lecture topic	1.1-1.3 (struct. det. properties; sizing&classifying matter; metric units; sci. meth.)		1.5; 1.8-1.9 (atomic theory; subatomic particles; isotopes; av. atomic mass - no MS)		
	Recitation	Ch. 1: Cc: 1.2 (p. 8); 1.3 (p. 10); For practice: 1.1 (p. 11); 36, 46, 50, 97; Honors: 42, 81				
	Lab	No lab this week				
2	Date	9/29/2014	9/30/2014	10/1/2014	10/2/2014	10/3/2014
	Lecture topic	2.3-2.4; 2.6-2.8 (d; E; dimens. analysis; from 2.6, only Example 2.6)		3.2-3.3 (light; photoelectric effect; Bohr model - no interference & diffraction)		
	Recitation	Ch. 1: 62, 64a&c, 86; Ch. 2: 16, 23, 52; Ch. 3: 40c, 46a; Honors: Ch. 2: 40, 70				
	Lab	Exp. 1 (Spectroscopy), even-numbered sections				
3	Date	10/6/2014	10/7/2014	10/8/2014	10/9/2014	10/10/2014
	Lecture topic	3.5-3.6 (orbitals; quantum #; no uncertainty pr.)		4.1-4.3 (per. table; e ⁻ config.; shield.; Z _{eff})		
	Recitation	Ch. 3: 61, 62, 66, 69b, 71, 106; Ch. 4: 44, 46; Honors: Ch. 3: 98; 104				
	Lab	Exp. 1 (Spectroscopy), odd-numbered sections (except 73, 75, and 125)				
4	Date	10/13/2014	10/14/2014	10/15/2014	10/16/2014	10/17/2014 EXAM 1
	Lecture topic	HOLIDAY 4.4-4.5 (orb. blocks; types of elem.; monoat. ions)		4.6-4.8 (Z _{eff} & per. trends)		
	Recitation	Ch. 4: 50b&c, 52a,b&d, 54, 60, 64a-c, 94, 104; Honors: Ch. 4: 127, 133				
	Lab	Exp. 2 (Conductivity), even-numbered sections (except 64H, 66, 68H, and 70)				
5	Date	10/20/2014	10/21/2014	10/22/2014	10/23/2014	10/24/2014
	Lecture topic	5.1-5.3; 5.6 (bonds type; formulas type – no empirical; no naming; monoat. vs. polyat. ions; cmpds. vs. mixtures)		5.4; 5.7; 5.9-5.10 (Lewis str.; formula mass; molar mass; % composition)		
	Recitation	Ch. 5: 34a&b, 40, 74c, 78a&d, 80a&c, 84a,b&d, 89, 120; Honors: 137				
	Lab	Exp. 2 (Conductivity), odd-numbered sections				
6	Date	10/27/2014	10/28/2014	10/29/2014	10/30/2014	10/31/2014 EXAM 2
	Lecture topic	6.3-6.5. (molec. & polyat. ions Lewis str.; no formal charge ; exc. to the octet rule)		6.2; 6.6 (bond properties)		
	Recitation	Ch. 5: 122; Ch. 6: 24, 28a,b&d, 34b&c, 46a&b, 50b&d, 52; Honors: Ch. 5: 139; Ch. 6: 88				
	Lab	Exp. 3 (Stoichiometry), even-numbered sections				
7	Date	11/3/2014	11/4/2014	11/5/2014	11/6/2014	11/7/2014
	Lecture topic	6.7-6.9 (VSEPR – geom. & approx. bond angles up to 6 e ⁻ pairs)		6.10; 8.2-8.3 (molec. polarity; stoichiom.)		
	Recitation	Ch. 6: 54, 58a,b&d, 72; Ch. 8: 16, 20, 34a,b&d, 38b&c, 42; Honors: Ch. 6: 62b-d				
	Lab	Exp. 3 (Stoichiometry), odd-numbered sections				
8	Date	11/10/2014	11/11/2014	11/12/2014	11/13/2014	11/14/2014 EXAM 3
	Lecture topic	8.4-8.5; (LR; yield: actual, theoretical, % yield)		10.1-10.4; 10.6 (quantifying heat & work; no pΔV calc.)		
	Recitation	Ch. 8: 59; Ch. 10: 34, 38, 44c, 52, 53, 60; Honors: Ch. 8: 70				
	Lab	Exp. 4 (Freezing point depression), even-numbered sections				
9	Date	11/17/2014	11/18/2014	11/19/2014	11/20/2014	11/21/2014
	Lecture topic	10.5; 10.7-10.9 (calorimetry; ΔH calc.)		11.2-11.3 (pressure; gases' laws)		
	Recitation	Ch. 10: 68, 69, 72, 76, 79; Ch. 11: 26a,b&d; 30; Honors: Ch. 10: 57				
	Lab	Exp. 4 (Freezing point depression), odd-numbered sections				
10	Date	11/24/2014	11/25/2014	11/26/2014	11/27/2014	11/28/2014
		Thanksgiving NO CHEM 101 CLASSES TUESDAY-FRIDAY				
	Lab	Except Exp. 1 for sections 73, 75, and 125 on Tuesday				
11	Date	12/1/2014	12/2/2014	12/3/2014	12/4/2014	12/5/2014
	Lecture Topic	11.4-11.5 (ideal gas law & appl.); 11.6 (pg. 407-409); 11.7 (p. 414-415)				Review
	Recitation	Ch. 11: 32, 34, 36, 44, 58, 65, 85; Honors: 107				
	Lab	MAKE UP LAB: Tue(12/2) and Wed (12/3)				
12		FINAL EXAM WEEK (12/8-12/13)				