

# General Chemistry 142, Spring 2014

<b>Sections</b>	<b>Chem 142-12A</b>
<b>Meeting Time</b>	<b>MWF 12:00-1:05 pm</b>
<b>Location</b>	<b>Pierce 223</b>
<b>Instructor</b>	Dr. Annette Neuman
<b>E-mail</b>	<a href="mailto:annette.neuman@emory.edu">annette.neuman@emory.edu</a>
<b>Office</b>	Pierce 202
<b>Office Hours</b>	Mondays 3-5 pm, Wednesdays 9:30-11:30 am, Fridays 9:30-11:30 am (drop-in) Or by appointment (e-mail me to set up a time)

**Description** General Chemistry II is the second of a two-semester course designed to introduce you to the fundamental terminology, principles, and theories of chemistry. The skills you gain in this class will prepare you for success in higher-level chemistry courses.

Oxford College is dedicated to a liberal arts education. The ultimate goal of a liberal arts education is not to provide a collection of knowledge, but rather to teach you how to think and how to learn. The study of science is an integral part of a liberal arts education. In Chemistry 142, you will develop strong skills in problem solving as you study concepts that explain how the world works. The skills you develop in general chemistry will be invaluable as you continue your studies in medicine or other fields.

**Learning Outcomes** The two primary goals of this course are

1. to train you to explain natural phenomena using the quantitative and qualitative principles of general chemistry, and
2. to prepare you for success in subsequent science classes.

In support of these ultimate goals, you will learn to select and apply algebra-based skills to solving quantitative problems, as well as to apply concepts you have learned in order to predict or explain changes in a system.

**Content Knowledge** To succeed in this class, you must master the following topics:

1. coordination compounds
2. intermolecular forces
3. phase diagrams
4. units of concentration
5. factors affecting solubility
6. colligative properties
7. rates of reaction
8. reaction mechanisms
9. chemical equilibrium
10. pH and  $pK_a$  of acids and bases
11. buffer solutions
12. acid-base titrations
13. solubility equilibria
14. entropy and free energy
15. electrochemical cells
16. nuclear chemistry

## Course Materials

Required textbook: *Chemistry*, 11<sup>th</sup> edition, by Raymond Chang and Kenneth A. Goldsby

Nonprogrammable scientific calculator: Calculators that can download and/or store information, can automatically solve equations, or can be programmed may not under any circumstances be used on an exam. **If you bring such a calculator on exam day, you will not be allowed to use it.**

Optional: *Student Solutions Manual*, by Brandon Cruickshank  
*Student Study Guide for Chemistry*, by Raymond Chang and Kenneth Goldsby

Bring a notebook, pen or pencil, and calculator to every class. It is not necessary to bring your textbook.

Required for lab: Laboratory manual, sold by the Chemistry Department  
Carbon-copy lab notebook  
Safety glasses

**You must have all three materials for lab *before* your first lab meeting.**

## Grading

Your course grade will be computed as a weighted average comprising 80% of your lecture grade and 20% of your lab grade.

In lecture, you will have seven equally weighted grades (100 points each):

Total problem set score (10 problem sets at 10 points each)

Four in-class exams

Final exam (200 points; counts as two exam grades)

Your lowest exam grade will be dropped, so that your lecture grade will be composed of the average of your five highest exams and your total problem set score.

Your final letter grade will be determined by the usual scale. *There is no automatic rounding or curve to course grades.*

	93		90		87		83		80		77		73		70		67		60	
A		A-		B+		B		B-		C+		C		C-		D+		D		F

In fairness to all students, grades must be based solely on your performance in the course. If you believe I have misgraded an assignment, please bring this to my attention immediately. Otherwise, **under no circumstances will grades be open for negotiation.**

Partial credit will be awarded at my discretion and is not open for negotiation.

**Note:** You must earn a passing grade in both lecture and lab components in order to be awarded a passing grade in the course. If you fail either the lecture or the lab, you will receive an F in the course.

## Problem Sets

Diligently working problems is one of the major keys to success in general chemistry. To this end, you will be assigned to a small group during the first week of class. You must work with your group on each problem set and submit a single copy of your assignment. **Your submission must reflect the collaboration of all group members.** Ten problem sets will be assigned throughout the semester. They will be due at the beginning of class on Wednesdays.

<b>Additional Problems</b>	Suggested problems from the textbook will be posted to the Blackboard site. You should work these problems on your own or with a study group. These problems are for your own practice and will not be collected.	
<b>Exams</b>	We will have four 65-minute in-class exams. The exams will be given during the regularly scheduled class period.	
	Exam 1	Friday, February 7 Ch. 23; Ch. 11-12
	Exam 2	Friday, February 28 Ch. 13-14
	Exam 3	Friday, April 4 Ch. 15-16
	Exam 4	Friday, April 25 Ch. 17-19
	Exams will consist of quantitative problems as well as short essay questions. Some exams may include a few multiple choice questions. Exams will cover all material in lecture in addition to assigned textbook readings and other supplemental materials.	
	Make sure that you have a pen or pencil and an <b>acceptable</b> calculator with you for each exam. You will not be allowed to use a graphing calculator on exams.	
<b>Final Exam</b>	The final exam will be comprehensive. It is given during the scheduled exam period, which is Wednesday, April 30, 9 am – 12 pm.	
<b>Makeups</b>	Makeup exams are not given after missed exams. In extenuating circumstances, it may be possible for a student to take an exam ahead of time, if I am given at least seven days' notice. Under no circumstances will a makeup exam be given <i>after</i> the scheduled time and date of the exam.	
<b>Review Sessions</b>	Review sessions will be held one or two days before each exam, at a mutually agreed upon time. These sessions are completely optional and will give you the opportunity to ask me any questions you may have about the current material.	
<b>SI</b>	We are fortunate to have Claire Jung as the SI leader for our section of Chemistry 142. Claire excelled in my Chemistry 142 class last year, and her advice will be very valuable for learning and understanding general chemistry.	
<b>Topics</b>	Chapter 23	Transition Metals Chemistry and Coordination Compounds (selected topics)
	Chapter 11	Intermolecular Forces and Liquids and Solids
	Chapter 12	Physical Properties of Solutions
	Chapter 13	Chemical Kinetics
	Chapter 14	Chemical Equilibrium
	Chapter 15	Acids and Bases
	Chapter 16	Acid-Base Equilibria and Solubility Equilibria
	Chapter 17	Entropy, Free Energy, and Equilibrium
	Chapter 18	Electrochemistry
	Chapter 19	Nuclear Chemistry (selected topics)

<b>Expectations</b>	<p>You are expected to behave as a polite adult in our class and lab meetings. Polite adults do not send text messages or play on Facebook during meetings. Therefore, electronics including but not limited to cellular phones, tablets, laptop computers, and mp3 players <b>may not be used</b> during class or exam periods. Even if I do not call you out in class, be assured that I can see you texting. <b><i>Using these devices during class or lab meetings may adversely affect your course grade.</i></b></p> <p>You should minimize your trips to the restroom or other reasons for leaving during class. You may excuse yourself from class if necessary, but this is very distracting and should be kept to a minimum.</p> <p>You are expected to take responsibility for your own successes and failures. Lamé excuses about why you slept through the exam will not get you far in life.</p>
<b>Honor Code</b>	<p>Academic integrity is crucial to the Oxford community. Therefore, as in all courses, you will be expected to adhere to the Oxford College Honor Code. Academic misconduct, as defined in the honor code, will not be tolerated and will be immediately referred to the Honor Council.</p> <p><b>Collaboration is not permitted on exams or lab reports.</b></p>
<b>Disability Accommodations</b>	<p>If you are registered with Access, Disability Services, and Resources (ADSR), please submit documentation letter to me during the first week of the semester so that I can make appropriate accommodations.</p>
<b>Attendance</b>	<p>All students are expected to attend all lecture and laboratory sessions. However, I recognize that emergencies can arise that may result in absence from class. You should notify me if an absence is due to illness or other emergency. You are responsible for all material covered in lecture if you are absent.</p> <p>Besides missing class, these also count as an absence:</p> <ol style="list-style-type: none"> <li>1. Being late to class three times. (This means coming in after I've finished checking the class roster.) If you come in late, it is your responsibility to see me immediately after class to ensure that you are marked as being tardy and not absent. No adjustments will be made at a later time.</li> <li>2. Coming to class more than 15 minutes late.</li> <li>3. Leaving class early.</li> <li>4. Going in and out of class.</li> <li>5. Being inattentive or working on other assignments in class.</li> </ol> <p>You are allowed 3 <i>absences</i> from lecture. If you exceed the 3 absence limit for <i>any</i> reason, by any combination of absences and tardies, you will:</p> <ol style="list-style-type: none"> <li>1. Lose 2 points for the next 2 absences (absences 4 and 5)</li> <li>2. Lose 3 points for each additional absence</li> </ol> <p>Note that each point deducted is a percentage point of your final grade. Therefore, excessive absences will have a significant negative impact on your course grade</p> <p>Chronic absences due to severe illness or other extenuating circumstances are to be handled through the office of the Dean of Academics, at the student's initiative. Only that office can dictate a deviation from course policy.</p>
<b>Blackboard</b>	<p>The Chemistry 142 page on Blackboard will be the primary means of communicating outside of class. It will also house supplementary course resources. <b>Please be sure to check the course page daily.</b></p>

**Student Work** Occasionally I will photocopy assignments that you turn in for inclusion in my teaching portfolio. Furthermore, student work submitted as part of this course may be reviewed by Oxford College and Emory College faculty and staff for the purposes of improving instruction and enhancing Emory education.

**Tips for Success:** Chemistry 142 is an intensive course and requires time. To perform well in this course, you must manage your time appropriately. You must have a proper study plan, beginning from the first day of class.

1. Develop a good attitude. Chemistry can be both fun and interesting if you allow it to be.
2. WORK PROBLEMS! The assigned problem sets are a good place to start, but you should also work lots of problems from the textbook.
3. Manage your time and your life. There are LOTS of extracurricular activities to get involved in at Oxford. None of them are an excuse for poor performance in the classroom. Remember why you are here.
4. The average student will need to set aside *at least* eight hours a week to study for this class. However, students come into this class with all sorts of different backgrounds. You may be able to get away with studying less than this, or you may need to devote much more time in order to succeed. Do not compare yourself to your classmates. Just do what YOU need to do in order to succeed.
5. Keep two things in mind: one—learn terminology and understand the relevance of that terminology to chemical systems. Second—this course is designed to make you think and not just to have you memorize facts. Memorizing facts is important to establish a basis for your knowledge but is not sufficient for success in Chemistry 142. You must be able to use your knowledge to think logically and analytically. Many of the test questions will require you to apply your knowledge. You should be confident of what you know and what it means.
6. Come to class every day, stay alert, and take good notes.
7. Read the assigned material before each class, read it again after each class, and read it a third time before the exam.
8. Form a study group with a few classmates and work problems together.
9. Use the resources available to you: SI sessions, office hours, review sessions, chemistry tutors, and your classmates are all excellent resources to help you achieve success in this class.
10. The pace of this course is rapid. Stay current with the material and don't get behind.