

# General Chemistry I

Chemistry 11, Fall 2009

TR 9:55-11:40 am

**Instructor:** Dr. Steven Suljak, DS 109  
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Office Phone: 554-4949

## Required Texts and Other Materials

### Lecture

- *Chemistry: The Central Science*, Brown, LeMay, and Bursten, 11<sup>th</sup> ed. 2008 (Solutions Manual recommended; Mastering Chemistry optional)
- IClicker (~\$38 at bookstore)
- Problem notebook (bound or spiral are ok)
- Calculator capable of logarithms and scientific notation

### Laboratory

- *General Chemistry I, Laboratory Manual, Fall 2010*, by Dept. of Chem.
- Bound notebook (quadrille-lined composition books good)
- Approved splash goggles (can be purchased from dept. 1<sup>st</sup> week of lab)

**Office Hours:** Monday 6:00 pm – 7:30 pm (basement of Benson)  
Wednesday 12:00 pm – 1:00 pm  
Other times by arrangement

## Tentative Course Outline

<u>Date(s)</u>	<u>Topic</u>	<u>Text Chapters</u>
Sept. 21-23	Atomic Structure, Dimensional Analysis, etc.	Chapters 1&2
Sept. 28-20, Oct. 5-7	Stoichiometry, Chemical Equations	Chapter 3 (start 4)
<b>Oct. 12</b>	<b>Midterm Exam (covers primarily chapters 1-3)</b>	
Oct. 14, 19, 21	Stoichiometry: Solutions	Chapter 4
Oct. 26, 28	Thermochemistry	Chapter 5
Nov. 2, 4	Electronic Structure of Atoms	Chapter 6
Nov. 9	Periodic Properties of Elements	Chapter 7
Nov. 11	Begin Chemical Bonding	Chapter 8
<b>Nov. 16</b>	<b>Midterm Exam (covers primarily chapters 4-7)</b>	
Nov. 18	Chemical Bonding	Chapter 8
<b>Nov. 23, 25</b>	<b>Thanksgiving Break!</b>	
Nov. 30, Dec. 2	Molecular Geometry and Bonding Theories	Chapter 9
<b>Thursday Dec. 9</b>	<b>Final Exam (cumulative), 9:10 – 12:10 pm</b>	

## Quiz Dates (all Tuesdays):

September 28	November 2
October 5	November 9
October 19	November 30
October 26	

## Course Objectives

The primary objective of the general chemistry sequence is to give you a solid foundation in both theoretical and descriptive chemistry. Special emphasis will be placed on development of problem-solving skills as well as on the application of basic chemical concepts. Specific learning objectives include:

- Learn the fundamentals of the properties of matter, measurement, and uncertainty
- Acquire a thorough understanding of the modern theory of atomic structure and atomic level phenomena
- Begin to learn the symbolism and terminology (language) of chemistry
- Obtain a thorough introduction to modern chemical bonding theories and their implications
- Learn the organization and information conveyed by the periodic table of the chemical elements
- Begin to learn and categorize selected types of chemical reactions
- Understand the quantitative implications of chemical formulas and chemical reactions, including processes occurring in solution
- Understand the various forms of energy and the roles energy plays in physical processes and chemical systems and reactions

## What Should I Bring to Class?

- A calculator
- Your IClicker
- Pen/pencil and paper (no need to haul your text with you)

## Course Evaluation

The overall course is worth 800 points distributed as below:

Midterm Exam #1	140
Midterm Exam #2	200
Quizzes (best 5 of 7)	150
Problem Notebook/HW	60
Final Exam	250

The class is graded on a curve based on your total score out of 800 points. Historically, ~40% of students earn A's and B's in Chemistry 11 according to department guidelines, but this varies slightly from year to year depending on the strength of a given class. Absolute exam scores are an imperfect guide to your final course grade, but I'll indicate estimated letter grade cutoffs upon returning each midterm.

Your grade is also influenced by your performance in the laboratory. **Failure to complete the laboratory is grounds for failure in the course.** Successful completion of the laboratory is defined as (1) earning at least 75% of the laboratory points (150/200), (2) having no more than one unapproved absence, and (3) having no more than two total absences (even if approved). The majority of students who complete the laboratory will find that it has no effect on their course grade. However, a small number of people who perform exceptionally well may receive a 1-2% increase in their point total (8-16 points in the above scheme), and a small number of people who perform particularly poorly may receive a similar decrease in their point total.

Please note that the following dress code has been established for all students, staff, and faculty in chemistry department laboratories:

- A "t-shirt" is the minimum coverage of the upper body that is acceptable.
- Long pants are required.
- Closed-toe shoes, ideally with a non-permeable upper component covering the foot, are required.
- Safety goggles are required. These can be purchased in the first week of classes before your lab for \$15. The cost increases to \$20 later in the quarter. More details concerning acceptable safety glasses will be provided to you in your laboratory section.

Failure to meet these requirements will result in a student having to leave the laboratory until such time as any deficiencies have been addressed.

There will be no extra credit to improve individual grades. Doing extra work is certainly encouraged and will likely improve your exam scores, but writing a term paper or mowing my lawn are not available as options to enhance your point total...

### Midterm Exams

Exams will be given on the dates noted. The first midterm exam will be shorter and worth less than the second. This is intended to give you early feedback on how effectively you are learning material so that you can adjust your study habits as needed in time for the remainder of the quarter. Make-up exams will be given only for exceptional circumstances and must be discussed (in advance) with the instructor. Since the course is cumulative (i.e. it builds on itself), all material to-date is liable for coverage on each exam, but the *emphasis* will be the material covered since the last exam (except for the final).

### Quizzes

Short quizzes will be given each Tuesday (except for the first week and exam weeks). [Note: This includes the Tuesday after Thanksgiving break!] Out of the 7 quizzes, only the best 5 will count toward your final grade. This means you can have a couple of bad weeks without your grade being adversely affected. Because of this policy, no make-up quizzes will be given. Repeat: **No make-up quizzes will be given!** The quizzes are designed to test simpler knowledge than exams and ensure that you keep up with the material.

### Problem Notebooks

Material and problems that make sense in class or when working in groups often have a habit of being considerably less clear when trying to work through them on your own. Practicing problems individually throughout the quarter will prove invaluable as you try to sort through the issues discussed in class. With this in mind, you are required to keep a problem notebook during the quarter, working through several of the problems from the back of each chapter discussed in class. A list of suggested problems for each chapter can be found on ERes—you should consider this to be the “minimum” effort for the problem notebook. The notebooks will be collected twice during the quarter, at each midterm exam. The problems themselves will not be “graded” per se, but instead the overall notebook will be evaluated on a 30-point scale based on the effort presented:

Nearly all problems included	30 points
A majority of problems included	20 points
A fair number of problems included	10 points
A notebook with at least one problem	5 points

Please use some type of **bound notebook** for this (spiral bound is ok). Do NOT staple sheets of loose-leaf notepaper.

There are a number of reasons for putting significant effort into these notebooks. First, it's an easy 60 points toward your final grade. More importantly, taking the time to work through these problems will help you identify individual weaknesses that require additional study, and the practice has been evidenced to substantially improve performance on quizzes and exams. Finally, these problems will occasionally pop up on quizzes, and similar problems will likely appear on exams. Important: The full benefits of this work can only be realized by working these problems throughout the quarter, preferably as we go through material. While doing several chapters of problems immediately before an exam and handing in the notebook will still be better than not doing them at all, such a strategy is not nearly as effective for truly understanding material.

Note: As part of course evaluations from my Chemistry 11, I ask students “If another student about to take Chem 11 asked you for advice on how to succeed, what would you recommend?” Fully 2/3 of the respondents specifically mention consistent work on the problem notebooks as the most important aspect of performing well in this course.

### Attendance

Except for the first couple of classes (when verifying the course roll sheet), attendance will not be taken. You are, however, expected to attend all classes and will be responsible for everything covered. Frequently, we will discuss topics not explicitly addressed in the text, and even more frequently will go into more depth than the text

does. If you are ill, have a university scheduled event, etc. and know that you will be missing class, I'd appreciate if you would let me know. Significant attendance problems could have an adverse effect on your grade.

### **IClickers**

We will make frequent use of the IClicker system during this course, and you are expected to bring your own clicker with you to class each lecture.

### **Academic Integrity**

Giving or receiving unauthorized aid in any form is not tolerated and can result in course failure. Academic dishonesty includes but is not limited to looking at other students' papers during exams, allowing another student to copy off your paper, the use of lecture notes or textbooks during exams, inappropriate use of programmable calculators, and the use of cell phones or other electronic devices during exams.

### **Seeking Help Outside of Class**

You are definitely encouraged to stop by my office (DS 109) with any questions or problems throughout the quarter. The office hours listed on the first page are the times when you are guaranteed first priority, but you are welcome to stop by at any time during the week if I am available. My office phone is noted, but I am really bad at checking voice mail. The best way to reach me is via email, which I check often throughout the day and evening.

Before exams, I will make a point of being available for help/problem sessions the day before the exam. These will be announced during class.

### **ERes and Email**

This course will make extensive use of the electronic reserve system called ERes, available via <http://eres.scu.edu>. My Chem 11 course page (password "brown") will contain downloadable copies of all handouts, problem sets, exam keys, and other useful information. In addition, any important announcements will be sent to an email distribution list for the class, so be sure to check your email regularly.

### **Peer Tutoring**

Drop-in peer tutoring will be available during the quarter. Details are posted on ERes. You may attend any of the sessions offered on Tuesday-Thursday evenings.

### **Standards**

This course is a prerequisite for Chemistry 12, General Chemistry II. In order to be eligible to enroll in Chemistry 12, you must complete Chemistry 11 with a grade of C- or better. If you do not meet that standard, it is your responsibility not to enroll, or to withdraw from pre-enrollment, in Chemistry 12. If you do enroll for a course for which you do not qualify, you are subject to Administrative Withdrawal on the first day of class.

### **Core**

This course fulfills the Natural Science requirement of both the "old" core and the "new" core (a component of "Explorations"). In addition, this course is associated with the Values in Science & Technology pathway of the new core. If you declare a Pathway in this area you may use a representative piece of work from this course in the Pathway Portfolio you will complete during your senior year. Recommendation: Keep copies of your work, including graded laboratory reports.

### **Disability Accommodation Policy**

To request academic accommodations for a disability, students must contact Disability Resources located in The Drahmann Center in Benson, room 216, (408) 554-4109; TTY (408) 554-5445. Students must provide documentation of a disability to Disability Resources prior to receiving accommodations.