

Lectures:	TR 1:00-2:15PM, 1351 Chemistry
Lecturer:	Prof. Edwin Sibert 8305c Chemistry 608-262-0265
Office Hours:	1:00-2:00 Wed & 3:30-4:30 Thurs, 8305c Chemistry
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Introduction

Chemistry 103 is the first semester course in a two-semester General Chemistry sequence. The second semester course is Chemistry 104. Students who take Chemistry 103 should also plan to take Chemistry 104. Chemistry 103 and 104 provide a general background concerning the principles and factual basis of chemistry. The 103-104 sequence serves as a prerequisite for advanced courses such as Organic Chemistry (341 or 343), Analytical Chemistry (327 or 329), and Inorganic Chemistry (311). Students in Chemistry 103 should have placed into Math 114 or higher.

Textbook and Other Required Material

1. *Chemistry: The Molecular Science* (5th Ed.), Moore and Stanitski. Although used copies may also be available, we have obtained a significantly discount price for the full bundle. You may purchase either the hardcover edition, a slightly less expensive unbound edition, or an electronic-only text (available with OWL2 account—see item 6 in this list).
2. *Chemistry 103 Laboratory Manual*, Fall 2015 and carbonless laboratory notebook. The manual and notebook can be purchased (cash only) outside the classroom during the first two week of classes and later at the first floor stockroom window (room 1334).
3. Safety goggles. Industrial quality eye protection is **required** in all chemistry laboratories. Safety goggles that fit over regular glasses can be purchased from University bookstores or along with the lab manual and notebook.
4. An electronic RF “clicker”. The lectures will make regular use of student “voting” on concept tests, surveys, and other questions. You will need to buy a radio-frequency clicker, specifically an I-clicker (not the web-clicker app) and bring it to every lecture. These can be purchased at the University Bookstore.
5. An inexpensive calculator capable of calculating square roots, logarithms and exponential operations. The calculator will be used on exams, homework assignments, and in the laboratory. Any programmable calculator may be used so long as 1) it is allowable for both the ACT and SAT exams and 2) it is only used for simple mathematical calculations and not used to store information such as chemical formulas or equations.

- An OWL2 account for access to on-line homework. This is bundled with your new textbook for no additional charge. Instructions for registering are given on the course homepage on Learn@UW. In brief, if you purchased a used textbook or received one from another student, **you must** purchase your own access to the OWL2 system after registering for the OWL2 course online. Register using the address: <http://login.cengagebrain.com/course/E-TWQN5ATJ4AUGD>. Use your wisc.edu e-mail address as your primary e-mail and your NetID in the "student ID" field.
- USB Drive: A USB flash drive that will hold at least 2 GB is highly recommended for laboratory data collection.

Course Organization and Expectations

This course is designed to help you to learn chemistry. Your professor and TA will do their best to guide you in mastering the material, but no course or instructor can learn for you. Learning is something only you can do. For that reason you are the most important feature of the course. Many learning activities are offered in order to meet the needs of different types of students; however, if you find that your learning needs are not being met or you are not satisfied with some aspect of the course please bring your concern to your professor or your TA.

Many of you are first semester freshmen. You will find several significant differences between your high school course and this course. Perhaps the biggest is the amount of time you should expect to put into this course, this ranging from 8-12 hours of out-side of class studying per week. The precise amount will depend on your academic background, native ability, and desired success level. In order to keep up, it is essential that you work on improving your studying and time management skills. A recommended study strategy for this course is: 1) read and/or watch the assigned material before each lecture, 2) attend class and take your own notes, 3) having read the Chapter, as soon as possible begin to work homework problems. When you encounter problems that you cannot solve, refer to the text, your notes, a tutorial, or your fellow students. Forming a study group to work through problems is an excellent way to learn chemistry. Group problem sessions will be stressed throughout the semester.

Throughout this course emphasis will be placed on understanding chemistry and learning to think effectively in solving problems. Successful problem solving requires a basic knowledge of principles, facts and terms: a vocabulary of chemistry. This course includes a range of activities that are aimed at facilitating the learning process. These activities are described below.

Lectures. You are expected to attend all lectures. During lectures we will discuss principles, and illustrate them with examples and demonstrations. We will make frequent use of in-class "ConcepTests" for which you will use your electronic clickers to vote for answers and, following discussions with your neighbors, revise your votes. You should take your own notes during lecture. If you would like some pointers on good note taking habits, we recommend you visit this [site](#). In addition, a set of lecture notes taken by a Teaching Assistant (TA) will be available on Learn@UW. Powerpoint will be used. Presentations can be downloaded from the course web page the night before each lecture. See page 6 for the lecture schedule

Classroom etiquette does become important with courses this large. Cell phones should be turned off or at least silenced. While laptops are not prohibited in class, you will not have any need for them during lecture. Using the computer or other devices during class for activities not related to the class is very distracting, not only for you but for those who are sitting nearby. Finally, our lecture room desks are very noisy when raised or lowered; so please wait until the instructor is completely done speaking before you lower your desk at the end of class. As much as possible class will be dismissed at 2:15, but sometimes just another minute or two is needed to finish up. Please be considerate of your classmates.

Lecture Demonstrations. Many chemical reactions and other phenomena are sufficiently dangerous or expensive that it is not practical for all students to experience them first hand. Nevertheless, such reactions may illustrate important principles or facts. When a demonstration is done in class, make careful observations

of what happens and make certain that you understand the principles the demonstration is designed to illustrate. Demonstrations are important, and questions about observations or principles that have been presented via demonstrations often occur on exams.

Textbook. The textbook supplements the lectures. It provides background material for the lectures and also works out many relevant examples. In addition, at the end of each chapter are a number of problems, and in the appendices are answers to selected problems. For an understanding of the material in this course it is important to solve as many of these problems as possible. Plan to buy your own textbook. A reference copy of the textbook is available for consultation in the Chemistry library.

Discussion Section. Discussion sections are for problem solving, working guided inquiry problems, laboratory explanations, and review. Your TA will go over some of the assigned problems. You should be prepared when you come to discussion section. Ask specific questions of your TA. Your TA may also discuss material relevant to the laboratory in discussion section.

Problem Sets. Problem solving is a crucial aspect of this course and problems will be assigned on a regular basis. These will be completed online via the OWL2 homework system. **A subset of the problems will be required, occasionally supplemented with additional recommended (but optional) practice problems.** In addition, each problem set will have a 10 additional points available. For example, the maximum score for a homework set may still be 100 points, but 110 points will be available on the assignment. The additional points can offset small errors and difficulties associated with the OWL2 system user learning curve. The system gives hints and allows multiple attempts, each with feedback. A small deduction (detailed for each problem set in the assignment and problem descriptions) is taken for each successive attempt. You can log on multiple times to complete the assignment. See Learn@UW for more information on the OWL2 online homework system. Assignments will typically be due by 11:55PM each Sunday night.

If you encounter technical difficulties with OWL2 pertaining to how answers are submitted/accepted or why you did not get credit for an answer that was later revealed to be correct, please send an e-mail to chem103hw@chem.wisc.edu with your name, course number (103), lecture section (4), and a brief description of your difficulty. Note that the group of people who assist you will not answer content related inquiries. Your textbook is an excellent source of additional practice problems, and answers to selected problems are given at the back of the book. Bring questions to your discussion section and to TA and faculty office hours. *In order to excel in this course you **must** solve problems. Lots of them.*

On-Line Videos. Select lecture material has been moved to an 'on-line' content in the form of a video. The longest video is about 15 minutes, but the average length is shorter. It is important that you will watch the video and answer the corresponding questions before coming to class. These videos, which can be found on learn@uw, free up class time for group activities.

Quizzes. Approximately 10-12 fifteen-minute quizzes will be posted online at the start of each week to help you evaluate your progress. These quizzes will not count toward your final grade, except that their completion is part of your discussion participation grade. Your TA will go over the quiz in discussion, and **you** will grade your own quiz. Though they are not graded, you should use your score as an indication of your progress in the course.

Technology Enhanced Learning. Much of the material for this course is only available via Learn@UW. You are urged to visit the web site routinely for up to date class information. You have access to the 103 materials via Learn@UW only if you are enrolled in this course. You can use Learn@UW on your own computer, a friend's computer, or any other computer on campus. Direct your Web browser to <https://learnuw.wisc.edu/> and log in. You will be asked for your NetID Username and Password. If you have a problem logging in, and you have been registered for this section of Chem 103 for at least two days, send an email to rbain@chem.wisc.edu.

Laboratory. The laboratory experiments are a vital part of this course; you will develop skills that are not easily learned or demonstrated in lectures. These skills include:

- Designing experiments and interpreting data
- Using laboratory equipment properly
- Working with your fellow students in the laboratory
- Communicating your ideas about the data through discussions and writing

You must successfully complete all of the laboratory assignments to receive a passing grade in this course.

You **must** prepare in advance for each laboratory exercise by writing an introduction and procedural outline in your lab notebook. During the lab period you will carry out the experiment, take notes, and complete your data analysis. All your work **must** be turned in at the end of the period in the form of the duplicate pages from your lab notebook. You will be graded on your pre-lab preparation, in-lab experimental technique and data analysis, and on your note taking skills. Your laboratory report is almost always due at the end of the laboratory period. Late laboratory reports are not graded. The lab schedule is printed on the attached calendar. Exercises in italics are computer labs.

Please note that sandals are not acceptable footwear in the laboratory. Contact lenses should **not** be worn in the laboratory because fumes or splashes may be caught between them and your eye. Further attire requirements are described in your laboratory manual and by your TA.

Exams. There will be three in-class exams (see course outline for dates). The majority of each exam is multiple choice, but the exam will include a significant short answer component. The in-class exams are based on material presented in lectures and assigned problems. Exams may also include questions based upon laboratory material. *No make-up exams will be given.* If you are excused from taking an exam, your in-class exam grade will be based on the two exams you did take. These exam will require you to synthesize ideas you have learned over the course in order to better understand the connections between basic chemical principles and the themes that are interwoven throughout the course.

Final Exam The two hour final exam is comprehensive, covering topics from the entire semester. All exam dates are given on page 6.

Grades

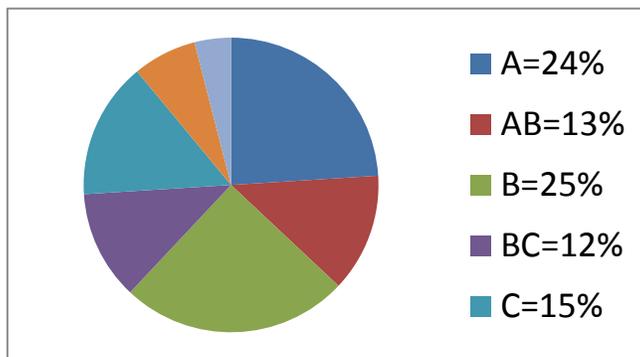
This course will be graded with the following scheme:

On-line Homework	15%
Discussion Participation	3%
3 Multiple Choice Exams	12%
Laboratory	20%
Clicker Points	3%
<u>Final Exam</u>	<u>22%</u>
Total	100%

Full clicker points are given for responding to 60% of all clicker questions; 33% of click points are given for responding to 40%.

The approximate distribution of final grades is given below. The top 24% of the students will receive A's and so forth. *It is important to note that the distribution will be adjusted upwards if class performance exceeds our expectations.*

An important difference between this course and many high school courses is that the grades you receive on the exams, homework, laboratories, and clicker points determine your final grade. One cannot improve this grade by performing additional work.



Approximate Distribution of Final Grades

Missing Class or Other Deadlines. If illness or other circumstances prevent you from attending an exam, meeting an assignment deadline, or attending laboratory your TA will work to accommodate the absence as long as you email him or her before the scheduled meeting time or deadline. If you are ill and cannot attend class, you will be able to use the class notes and Powerpoint slides on Learn@UW to obtain missed information.

OUTLINE – Lecture 4

Wk	Date	Topic	Chpt.	Lab.
1	R 9/3	Matter and Measurement	1	
2	T 9/8	Atoms and Elements	2	Citizen in Laboratory
	R 9/10	Atoms, Molecules, Ions	2	
3	T 9/15	Stoichiometry	2	Solns & Density
	R 9/17	Chemical Reactions	3	
4	T 9/22	Chemical Reactions and Stoichiometry	3	<i>Chemical Logic</i>
	R 9/24	Stoichiometry	3	
5	T 9/29	In Class Exam		No Lab.
	R 10/1	Energy & Enthalpy	4	
6	T 10/6	Energy & Enthalpy	4	Zn & I ₂
	R 10/8	Energy & Enthalpy	4	
7	T 10/13	Atomic Structure	5	Calorimetry
	R 10/5	Atomic Structure & Multi-electron Atoms	5	
8	T 10/20	Periodic Properties	5	Alum
	R 10/22	Periodic Properties & Review	5	
9	T 10/27	In Class Exam (<i>Drop Deadline Oct 30</i>)		No Lab.
	R 10/29	Chemical Bonding	6	
10	T 11/3	Chemical Bonding	6	Light, Color, Solutions
	R 11/5	Molecular Orbital Theory	6	
11	T 11/10	Molecular Shapes and Bonding	7	<i>Molecular Shapes</i>
	R 11/12	Molecular Shapes and Bonding	7	
12	T 11/17	Gases	8	Project Lab.
	R 11/19	Gases	8	
13	T 11/24	In Class Exam		No Lab.
		Thanksgiving Break		
14	T 12/1	Solids	9	<i>Window on S.S.</i>
	R 12/3	Intermolecular Forces	9	
15	T 12/8	Intermolecular Forces & Phase Diagrams	9	No Lab.
	R 12/10	Liquids, Solids, and Phase Diagrams	9	
16	T 12/15	Review		

Final Exam is Thursday, December 17 at 7:45am.

ADDITIONAL RESOURCES

Course Web-site on Learn@UW (<https://learnuw.wisc.edu/>): Our course website can be accessed via Learn@UW. The syllabus, schedules, office hours, TA lecture notes, course handouts, announcements and grades will all be available on Learn@UW.

General Chemistry Web Site (<http://www.chem.wisc.edu/content/genchem-main/>): Resource materials for general chemistry students are available on the General Chemistry website. The computer laboratory exercises, ChemPages, and other lab resources are accessed via the "Materials for Labs" link.

Study Groups: You may collaborate with other students on homework assignments and laboratory discussion questions. Study groups reflect the teamwork inherent in the way modern science is done; scientists frequently collaborate with others, either within the same department or at a distance with persons in other cities, states or countries. It is important to realize that although you may collaborate with other students on assignments, the work you submit must be your own.

Tutoring Services: A number of tutoring resources are available on campus, some free and some for a fee. For more information, see our Learn@UW site or the General Chemistry home page (<http://www.chem.wisc.edu/content/genchem-main/>) under the "Information for Students" section.

Students with Disabilities: Appropriate accommodations for lecture, laboratory, discussion, and/or exams can be arranged for students with disabilities. The McBurney Disability Resource Center (<http://www.mcburney.wisc.edu/>) can provide assistance. Accommodations still must be made well in advance, so please pursue these avenues immediately.

Advising and Counseling Services (University Health Services): College life can be stressful. If you are struggling with your academic course load or other academic issues, your advisor is a good resource. If you are struggling emotionally with anxiety, depression, or other health issues, individual counseling is available at University Counseling and Consultation Services. For more information go to their website (<http://www.uhs.wisc.edu/>) or call 265-5600. Crisis intervention services are also available 24 hours a day by dialing this same phone number and pressing option 9.

Academic Misconduct: It is expected that all students will conduct themselves with honesty, integrity, and professionalism. Any student caught cheating on an exam (including submitting an altered exam for regrade) will receive an F in the course. Any student caught cheating on homework, a quiz, or lab (for instance, copying another person's work or fabricating data) will receive a zero for that assignment. A second infraction will result in an F for the course. More information on what constitutes academic misconduct and policies on handling misconduct can be found in your chemistry lab manual and at the following website: <http://www.wisc.edu/students/saja/misconduct/UWS14.html>