CHEMISTRY 103 Lecture 2 - Fall 2011

Lectures:	1:20 – 2:10 pm MWF, 1351 Chemistry	
Lecturers:	Prof. Edwin Sibert 8305*c* Chemistry 608-262-0265	**Prof. Clark Landis** 6112 Chemistry 608-262-0362
Office Hours:	2:30-3:30 MT, 6112 Chemistry	
Website:	Learn@UW.	

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. The textbook, *Chemistry the Central Science, Brown, Lemay, Bursten, Murphy and Woodword, (12th edition),* ***and*** *the on-line homework MasteringChemistry.* A special University of Wisconsin edition is available at the UW Bookstore.

2. *Chemistry 103 Laboratory Manual*, Fall 2011, and carbonless laboratory notebook.

3. Safety goggles. Industrial quality eye protection is required in all chemistry laboratories. Safety goggles that fit over regular glasses can be purchased from local bookstores. Contact lenses should **not** be worn in the laboratory because fumes or splashes may be trapped between them and your eyes**.**

4. An I-clicker. The lectures will make extensive 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 I-clicker2 or web-clicker) 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.

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 the assigned material in the text 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 5 for the lecture schedule

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, 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.

On-Line Homework. There are 10 on-line "Mastering Chemistry" homework assignments. See the course outline on page 6 for the due dates given in parentheses. The homework should be printed out at the beginning of the week, and the answers should be entered online before 11pm on the day of the assignment. There is a 55 minute grace period after which no uncompleted problems can be accepted. Additional problems from the book will be assigned but not graded. Chemistry is a problem solving science, and the importance of working these problems cannot be understated. We encourage you to work in groups and not attempt to work on the questions at the last minute.

Exams. There will be four exams. Each exam has two parts. The first part is an in-class multiple choice exam; the second part is a group oriented, written exam based on solving challenging problems. These exams count for nearly half your total grade. The multiple-choice part of the exams, given during the class period (see course outline for dates), are based on material presented in lectures and assigned problems. In-class exams may also include questions based upon laboratory material. No make-up exams will be given. The written part of the exam occurs the week following the multiple choice exam. The written 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. These problems are designed for group work with three to five students. We will schedule evening and Friday morning workshop sessions where you can work on problems with a group. A TA or course instructor will be present at these sessions to act as a guide-on-the-side so that your group does not veer too far off-path in answering a question. Written exams are due on Friday at the end of the class period. There is no class on the day a written exam is due.

Cooperative Learning and Group Work. Learning depth and quality improve when problems are worked in groups and when problem solutions are explained, critiqued, defended and modified. We expect that you will work on written exams, problem sets, and laboratory experiments with your peers. However, all material that you submit for grading ***must be written in your own words*** **and** ***must identify others with whom you worked*****. Plagiarism will not be tolerated.** See the handout in laboratory manual for more details.

Final Exam The two hour final exam is comprehensive, covering topics from the entire semester. Lecture 2 exam is Sunday, 12/18 at 7:45 AM

Laboratory. In laboratory you will have the opportunity to explore some of the concepts discussed in lecture. Laboratory work is essential for an understanding and appreciation of chemistry. You must successfully complete the laboratory assignments to receive a passing grade in this course. You should prepare in advance for each laboratory exercise by writing up 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. Your laboratory report is due at a time specified by your TA. Please note that **late** laboratory reports are not graded. You will be graded on your in-lab experimental technique and data analysis,

and on your note taking skills. The schedule of labs is given in the course outline provided below. Italicized labs are computer labs.

Themes. Chemical concepts enhance our understanding of many urgent societal issues. We will emphasize consistently the relationship of small molecule properties to more general themes of sustainability, energy, and climate.

Resources. Your best source of information is your teaching assistant. They understand what it takes to succeed in this course and are trained professionals who can help you navigate this semester. The Greater University Tutoring Service (GUTS) offers free assistance to any student in this class via a variety of programs. These include study group tutoring, individual tutoring, study skills counseling. The chemistry fraternity AXE also provides free tutoring as do many of the First year Residence Halls. You can meet with the professors after class, during their office hours, or by setting up an appointment by email.

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.
Please log in to Chemistry 103 in Learn@UW as soon as possible.

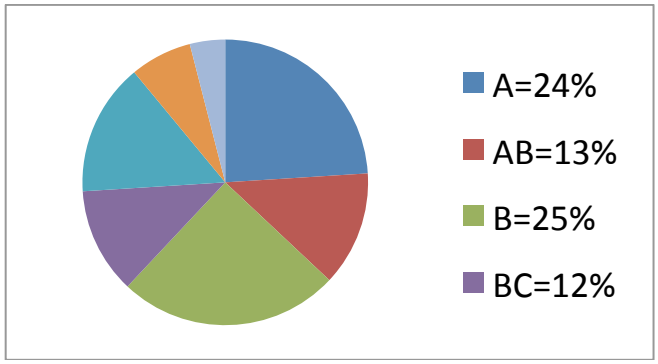
Grades. This course will be graded on a maximum of 227 points divided as follows:

10 MasteringChemistry Homework	40 points
5 Learn@UW Essay Homework	6 points
4 Written Portion of Exam	40 points
4 Multiple Choice Portion of Exam	60 points
Laboratory	40 points
Clicker Points*	6 points
Course Surveys*	3 points
Final Exam	32 points
Total	**227 points**

* 6 points are given for responding to 80% of all clicker questions; 3 pts are given for responding to 60%. Course surveys and evaluations allow us to assess and improve course components. You receive 3 points if you complete these surveys and evaluations.

Your final course grade will be based on your relative total of accumulated points compared to the rest of the class. The approximate distribution of final grades is given below. The top 24% of the scores 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 challenge problems determine your final grade. One cannot improve this grade by performing additional work.



Approximate Distribution of Final Grades

Health or Disability Concerns. All students at UW are entitled to an accessible, accommodating, and supportive teaching and learning environment. The provision of reasonable accommodation for students with disabilities is a shared faculty and student responsibility. Students are expected to inform their professor of their need for accommodation; the professor and TA are expected to make the necessary arrangements. If you have special needs, please make an appointment to speak to your professor and TA at your earliest convenience. If you have a condition that might result in a seizure, loss of consciousness, or other situation that might endanger your safety or the safety of others in the laboratory, please inform your TA.

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.

COURSE OUTLINE

Wk	Date	Lect	Topic	Chpt.	Laboratory	Assignment
1	2-Sep				No Lab.	
		1	Matter and Measurement	1		
2	5-Sep		*Labor Day*		Citizen in Laboratory	HW1 (Tues)
		2	Atoms and Elements	2		
		3	Molecules, Ions and Compounds	2		
3	12-Sep	4	Stoichiometry, Mass Comp.	3	*Chemical Logic*	HW2 (Tues)
		5	Stoichiometry, Mass Comp.,	3		
		6	Reactions in Aqueous Solution	4		
4	19-Sep	7	Stoichiometry, Concentrations	4	Solns & Density	HW3 (Tues)
			Review			
			In Class Exam			
5	26-Sep	8	Reactions in Aqueous Solution	4	*Lake Study*	**Written Exam** (Fri)
		9	Reactions in Aqueous Solution	4		
6	3-Oct	10	Energy and Chemical Reactions	5	Zn & I_2	HW4 (Tues)
		11	Energy and Chemical Reactions	5		
		12	Energy and Chemical Reactions	5		
7	10-Oct	13	Energy and Chemical Reactions	5	No Lab.	HW5 (Tues)
			Review			
			In Class Exam			
8	17-Oct	14	Atomic Structure	6	Calorimetry	**Written Exam** (Fri)
		15	Atomic Structure	6		
		16				
9	24-Oct	17	Multielectron Atoms	7	No Lab.	HW6 (Tues)
		18	Periodic Properties	7		
		19	Chemical Bonding	8		
10	31-Oct	20	Chemical Bonding	8	Alum	HW7 (Tues)
			Review			
			In Class Exam *(drop deadline)*			
11	7-Nov	21	Molecular Shapes and Bonding	9	No Lab.	**Written Exam** (Fri)
		22	Molecular Shapes and Bonding	9		
12	14-Nov	23	Gases	10	Light, Color, Solutions	HW8 (Fri)
		24	Gases	10		
		25	Gases	10		
13	21-Nov	26	Liquids	11	No Lab.	
			Thanksgiving Vacation			
14	28-Nov	27	Liquids	11	Project Lab.	HW9 (Tue)
			Review	11		
			In Class Exam			
15	5-Dec	28	Solids	12	*Window on S.S.*	**Written exam** (Fri)
		29	Solids	12		
16	12-Dec		Review			HW10 (Tue)
			Review			