

CHEMISTRY 103-2

Spring 2015

Lecture Section 2: M W F 12:05 – 12:55 PM Room 1351 Chemistry

Lecturers: Professor JR Schmidt Room 8305d 262-2996
schmidt@chem.wisc.edu (email inquiries for students from A-K)
Office hours: Tuesdays 9:15-10:15

Professor Gil Nathanson Room 7321 262-8098
nathanson@chem.wisc.edu (email inquiries for students from L-Z)

Office hours: Wednesday at 3:30-4:30 PM

Web site: Our Learn@UW web site

General Chemistry Office: Room 1328 Chemistry 263-2424

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).

Chemistry 103 is a fun and enlightening course, but you will need to devote significant time and effort to mastering chemical principles and solving problems. To excel, you must study chemistry *every day!* Please be prepared to commit 8-12 hours outside of class each week toward this effort. You will be guided in your studies by your Teaching Assistant/Faculty Assistant (TA/FA) throughout the course in both your discussion and lab sections.

TEXTBOOKS AND OTHER MATERIAL (Required)

1. *Chemistry, The Molecular Science 5th Edition*. **This is a custom package for UW, available at the University Bookstore at a reduced price, which includes the e-text and online homework system (OWLv2).** You may purchase either the hardcover edition or a less expensive unbound edition. If you prefer, you may purchase only the electronic version along with the homework system.
2. *Chemistry 103 Laboratory Manual*, Spring 2015 and carbonless laboratory notebook. The manual and notebook can be purchased (**cash only**) outside the lecture hall during the first two weeks of classes and later in the General Chemistry Office (room 1328).

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 or along with the lab manual and notebook. 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.
4. An electronic "iclicker". The lectures will make extensive use of student "voting" on concept tests, surveys, and other questions. You will need to buy an iclicker (i>Clicker, i>Clicker+ or i>Clicker 2) and bring it to **every** lecture. The iclicker can be purchased at the University Bookstore. Our system does NOT support the i>Clicker Go app. You must register your iclicker through the course homepage on Learn@UW.
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 lab. A programmable calculator may be used as long as no information is stored on it, such as chemical formulas or equations. It must be of the type allowable on an ACT or SAT exams (no cell phone or iPod calculators). You must clear the memory before entering the exam room.
6. An OWLv2 account for access to online homework. This is bundled with your new textbook. Instructions for registering are given on the course homepage on Learn@UW.

If you purchase a used textbook or receive one from another student or choose not to use a paper version, **you MUST** purchase your own access to the OWLv2 online homework system. The University Bookstore is cheapest. The homework system is automatically bundled with the etext.

7. Class handouts. Pick up handouts at the back of the room before lecture. You can also obtain a copy attached to the lecture notes on our Learn@UW web site.

COURSE INFORMATION

Lectures and Textbook. During lectures we will introduce principles and illustrate concepts with examples and demonstrations. *Please* read the textbook **before** coming to class and take your own notes during class. In addition, lecture notes taken in class by a TA/FA will be available at our Learn@UW web site listed above about two days after class. Pay special attention to the "Problem-Solving Examples", "Problem-Solving Practice" problems, "Conceptual Exercises", and "Exercises" throughout each chapter. You will learn a lot by trying these problems as you read the text.

Discussion Section. Twice a week, you will meet with your TA/FA and fellow classmates for discussion. In these meetings, you will discuss assigned homework problems, work with groups of students to explore class topics and reinforce/review existing ideas, learn about upcoming lab assignments, and have a forum for answering questions. *Please* prepare for discussion by bringing specific questions to class – this is a great opportunity to learn from your TA/FA and classmates.

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 OWLv2 homework system and submitted by a specified due date. **A subset of the problems will be required, supplemented with additional recommended (but optional) practice problems.** You can log on multiple times to complete the assignment. See Learn@UW for more information on the OWLv2 online homework system.

The best way to learn chemistry is to do problems while and after you read the textbook and lecture notes. Your textbook is an excellent source of additional practice problems, and solutions to selected problems are given at the back of the book. Bring questions to your discussion section, to TA/FA and faculty office hours, and to the problem solving sessions. *In order to excel in this course you must work on problems. Lots of them. We mean it.*

Quizzes. Your discussions sections will incorporate quizzes and in-class exercises almost every week. These are important opportunities to evaluate your progress and to reinforce what you have learned, and they count toward your final grade. Your TA/FA will go over the quiz/exercise with you immediately afterward, and **you** will grade it yourself. **Full credit** will be awarded as long as you complete the quiz/exercise and turn it in. You should use your performance as an indication of your progress in the course. Missed quizzes/exercises **cannot** be made up, **but if you complete 80% of the quizzes/exercises**, you will receive **full credit** for the quiz portion of your grade.

Problem Solving Sessions. The TA/FAs will supervise out-of-class problem solving sessions. This is *not* a lecture, but an opportunity to work through assigned problems with other students in groups. You are **strongly** encouraged to attend one of these sessions each week and work with your fellow students to hone your problem solving skills. **Do not miss this opportunity!**

Lecture Demonstrations. We will use demonstrations during lecture to illustrate important ideas and facts. Be sure to make careful observations of what happens. Questions about observations or principles that have been presented via demonstrations may appear on exams.

Exams. There will be three in-class exams of 50 minutes each and one two-hour final exam. **No** makeup exams will be given. Exams may include questions based on the laboratory material. The final exam will cover material from the entire semester. **Please be alert to these exam dates.** You must report any religious conflicts with exams or laboratory exercises to your TA/FA within the first two weeks of classes (by Feb 4).

Exam Dates: Monday, February 16	12:05-12:55 PM
Monday, March 16	12:05-12:55 PM
Monday, April 20	12:05-12:55 PM

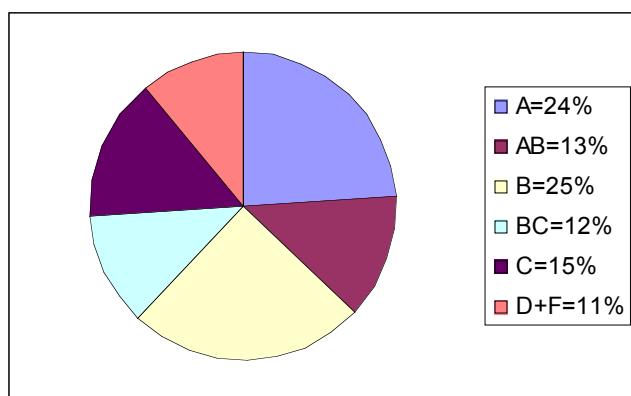
Final Exam: FRIDAY, MAY 15	10:05 AM – 12:05 PM (fixed date and time!)
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Grades. Your final grade will be computed with the following scheme:

Three 50 minute exams	12% each
Online Homework	15%
Laboratory	20%
Quizzes	3%
Clicker participation	2%
Final Exam	24%
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TOTAL	100%

Your scores are always available to you at Learn@UW. There are no opportunities for extra credit.

The approximate distribution of final grades is given below. It is important to note that the distribution will be adjusted upwards if class performance exceeds our expectations. For example, we guarantee that **at least** 24% of the grades will be A, and it may be higher.



Approximate Distribution of Final Grades

Concept Questions: Lecture attendance and active participation are **essential** to the learning process. You will be given many opportunities to participate by voting with your clickers. If you participate in **80% or more of the voting opportunities**, you will be awarded **full credit** for the “clicker participation” portion of your grade.

Computers and Study Room: Computers are available in the general chemistry computer room (room 1375). The study hall is located in room 1371.

PLACES TO GO FOR HELP OUTSIDE CHEMISTRY 103

1) University Counseling Center. The UCC offers counseling to improve study skills and to reduce test anxiety. See <http://www.uhs.wisc.edu/services/counseling/> for a description, or call 265-5600 or stop by 333 East Campus Mall.

2) Greater University Tutorial Service. GUTS offers help in a variety of subjects (including Chemistry 103) and in improving study skills. It is a student-run, volunteer organization. See <http://www.guts.studentorg.wisc.edu/>

3) Alpha Chi Sigma. Chemistry Fraternity. Free tutoring to be scheduled. Check their web site

<https://win.wisc.edu/organization/axsigma>

4) Private Tutors. A list of private chemistry tutors (available for a fee) is available at <http://www.chem.wisc.edu/content/genchem-student-information-and-services>. Our goal, though, is to provide you with enough assistance that you will not require a tutor!

THE 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 the laboratory assignments to receive a passing grade in this course.

Lab Preparation. 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 due at a time specified by your TA/FA, almost always at the end of the laboratory period. Please note that late laboratory reports are not graded.

The lab schedule is printed on the attached calendar. Exercises in italics are computer labs.

Attendance. You **must** attend all laboratory sessions. There is no opportunity to make up a lab that you miss; a grade of zero will be recorded for unexcused absences. If you have an excuse for missing lab, **please** notify your TA/FA as soon as possible, preferably before the lab period.

Health or Disability Concerns. If you have special needs, please make an appointment to speak to us and your TA/FA at your earliest convenience.

Academic Integrity. We expect all students to conduct themselves with honesty, integrity, and professionalism. You will be writing laboratory reports and answers to homework questions in this course. It is not OK to simply copy and paste material from the Web into these reports or answers. The Writing Center has a good description of how to paraphrase or quote material that you did not write yourself. See <http://writing.wisc.edu/Handbook/QuotingSources.html>. Copying lab reports or answers on quizzes or exams from someone else and passing them off as your own work is academic misconduct and will not be tolerated. Such misconduct is grounds for a failing grade in this course. Asking a student to “click” concept test responses for you when absent from class is also forbidden. To learn more about university policies on academic misconduct, see <http://www.students.wisc.edu/doso/academic-integrity/>.

Course Calendar – next page. Dates for lecture topics are **approximate**. The exam dates are **fixed**.

Week	Date	Lect	Topic	Chapter	Lab
1	19-Jan	1	W Nature of Chemistry	1	No Lab
		2	F Nature of Chemistry	1	
2	26-Jan	3	M Chemical Compounds	2	Citizenship in Lab
		4	W Chemical Compounds	2	
		5	F Chemical Compounds	1.13/2	
3	2-Feb	6	M Chemical Compounds	2	Solns/Dens/Graph
		7	W Chemical Reactions	3	
		8	F Chemical Reactions	3	
4	9-Feb	9	M Chemical Reactions	3	Zinc and Iodine
		10	W Chemical Reactions	3	
			F Exam Preparation		
5	16-Feb		M Exam I (fixed date)		No Lab
		11	W Chemical Reactions	3	
		12	F Chemical Reactions	3	
6	23-Feb	13	M Energy and Chemical Reactions	4	<i>Chemical Logic</i>
		14	W Energy and Chemical Reactions	4	
		15	F Energy and Chemical Reactions	4	
7	2-March	16	M Energy and Chemical Reactions	4	Solution Calorimetry
		17	W Energy/Electron Configurations	4/5	
		18	F Electron Configurations Periodic Table	5	
8	9-March	19	M Electron Configurations Periodic Table	5	No Lab
		20	W Electron Configurations Periodic Table	5	
			F Exam Preparation		
9	16-March		M Exam II (fixed date)		Synthesis of an Alum
		21	W Electron Configurations Periodic Table	5	
		22	F Electron Configurations Periodic Table	5	
10	23-March	23	M Electron Configurations Periodic Table	5	Light, Color, & Solns
		24	W Electron Configurations Periodic Table	5	
		25	F Electron Configurations/Covalent Bond	5/6	
11	30-March		Spring Break		
12	6-April	26	M Chemical Bonding	6	<i>Molecular Geometry</i>
		27	W Covalent Bonding/Molecular Structure	6	
		28	F Molecular Structure	6/7	
13	13-April	29	M Molecular Structure	7	No Lab
		30	W Molecular Structure	6.7/7	
			F Exam Preparation		
14	20-April		M Exam III (fixed date)		No Lab
		31	W Molecular Structure/Gases	7/8	
		32	F Properties of Gases	8	
15	27-April	33	M Properties of Gases	8	Project Lab
		34	W Solid State	9	
		35	F Intermolecular Forces	7.6/9	
16	4-May	36	M Intermolecular Forces/Liquids	7.6/9	<i>Solid State</i>
		37	W Liquids and Materials/Last Class	9	
			F Final Exam Preparation		
17	15-May		F Final Exam 10:05 AM - 12:05 PM (fixed!)		No Lab

Note: labs in *italics* are computer lab

CHEM 103-2/Schmidt and Nathanson CALENDAR

SPRING 2015

LAB DATES	Monday	Tuesday	Wednesday	Thursday	Friday	QUIZ DATES
NO LAB	19	20	21 First Lecture	22	23 Lecture	24 No quiz
25 Citizenship in the Lab	26 Lecture	27	28 Lecture	29	30 Lecture	31 Quiz 1
FEB 1 Solutions, Density, Graphing	2 Lecture	3	4 Lecture	5	6 Lecture	7 Quiz 2
8 Zinc + Iodine	9 Lecture	10	11 Lecture	12	13 Exam Prep	14 Quiz 3
15 NO LAB	16 Exam I	17	18 Lecture	19	20 Lecture	21 No Quiz
22 <i>Chemical Logic</i> (computer lab)	23 Lecture	24	25 Lecture	26	27 Lecture	28 Quiz 4
MARCH 1 Solution Calorimetry	2 Lecture	3	4 Lecture	5	6 Lecture	7 Quiz 5
8 NO LAB	9 Lecture	10	11 Lecture	12	13 Exam Prep	14 Quiz 6
15 Alum	16 Exam II	17	18 Lecture	19	20 Lecture	21 No quiz
22 Light, Color, and Solutions	23 Lecture	24	25 Lecture	26	27 Lecture	28 Quiz 7
29 NO LAB	30 Spring Break	31	APRIL 1 Spring Break	2	3 Spring Break	4 no quiz
5 <i>Molecular Geometry</i> (computer lab)	6 Lecture	7	8 Lecture	9	10 Lecture	11 Quiz 8
12 NO LAB	13 Lecture	14	15 Lecture	16	17 Exam Prep	18 Quiz 9
19 NO LAB	20 Exam III	21	22 Lecture	23	24 Lecture	25 No quiz
26 PROJECT LAB	27 Lecture	28	29 Lecture	30	MAY 1 Lecture	2 quiz 10
3 <i>Window Solid State</i> (computer lab)	4 Lecture	5	6 Last Lecture	7	8 Final Exam prep	9
NO LAB	11	12		14	FINAL EXAM 10:05 AM - 12:25 PM	16