

# CHEMISTRY 103

SUMMER 2017

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Lecturer:	Dr. Linda Zelewski
Email:	zelewski@wisc.edu
Office:	chem 2126
Office Hours:	M 2:00-3:00 p.m. (in chem 2126) W 1:00-2:00 pm (in chem 2126)
Lecture:	MWF 8:55-10:10 a.m. in chem 1361
Laboratory:	TuTh 8:55-11:55 a.m. in chem 1335
Discussion:	Section 301 MWF 10:20-11:35 a.m. in chem 2377 Section 302 MWF 10:20-11:35 a.m. in chem 2381
Website:	<a href="https://learn@uw.wisc.edu">https://learn@uw.wisc.edu</a>
General Chemistry Homepage:	<a href="http://genchem.chem.wisc.edu">http://genchem.chem.wisc.edu</a>
Undergraduate Chemistry Office:	Chemistry 1328, 263-2424
Chemistry Study Room:	Chemistry 1371
Chemistry Computer Room:	Chemistry 1375

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## REQUIRED MATERIALS

**Textbook:** *Chemistry: The Molecular Science*, 5<sup>th</sup> edition, by Moore and Stanitski. The University Bookstore offers a custom package at a reduced price that includes the e-text and online homework system (OWLv2). You may purchase the hardcover edition, a less expensive unbound edition, or an electronic-only textbook (available with an OWLv2 account).

**OWLv2 Homework Account:** Required to access online homework assignments. If you purchased a used textbook or received a textbook from another student, you must purchase your own access code to the OWLv2 system. Instructions on how to register and join the course are given on the Chemistry 103 Learn@UW homepage.

**TopHat Account:** Required to respond to ConcepTest questions during lecture. Instructions on how to register and join the course are given on the Chemistry 103 Learn@UW homepage.

**Lab Manual:** *Chemistry 103 Laboratory Manual*, Summer 2017, Department of Chemistry, UW-Madison (\$20, Wiscard only), sold in the second floor chemistry stockroom.

**Lab Notebook:** Carbonless laboratory notebook with duplicate pages.

**Safety Goggles:** Industrial quality eye protection is required at all times when you are in the lab. Safety goggles that fit over regular glasses can be purchased from local bookstores. Contact lenses should not be worn in laboratory because fumes or splashes may be trapped between them and your eyes.

**Calculator:** An inexpensive calculator with capabilities for square roots, logarithms and exponentiation (antilogarithms) and exponential (scientific) notation operations is required.

**USB Drive:** A USB flash drive that will hold at least 2 GB is required for laboratory data collection.

## **COURSE INFORMATION**

### **Why take Chemistry 103?**

Chemistry is the science of making things and transforming things. Chemistry is often called the central science because it connects so strongly to other sciences, among them physics, biology, engineering, medicine, materials science, and pharmacology. Chemistry 103 will meet a prerequisite requirement for many fields of study and careers. You will have an opportunity through Chemistry 103 to gain a new understanding of the complex world around you, and you will begin to learn how the many elements of the periodic table serve as building blocks of every substance and every process on earth and beyond.

### **How does this course fit with your preparation for your major?**

Chemistry 103 is the first course in a two-semester General Chemistry sequence. The second course is Chemistry 104. Students who take Chemistry 103 should also plan to take Chemistry 104. The 103-104 sequence serves as a prerequisite for advanced courses such as Organic Chemistry and Analytical Chemistry and is required by many other majors (such as engineering, many biological and agricultural sciences, pre-health professions, and L&S breadth requirements).

### **Chemistry 103 Goals and Course Outcomes**

We want you to learn to think like a chemist. With that in mind, this course has been designed and organized to help you learn chemistry. We will do our best to guide you, but no course or instructor can learn for you. Successful students are proactive about their learning and establish patterns of study.

We have two overarching goals for our chemistry program: 1) You will conceptualize the invisible by understanding the atomistic model of matter and the role of energy in transformations, and 2) you will operate as a scientist by learning how to think logically, communicate effectively, and solve problems methodically.

By the end of Chemistry 103, you will:

1. Gain understanding in a breadth of basic chemical concepts and principles.
2. Develop the ability to solve a wide variety of integrative chemistry problems.
3. Apply submicroscopic models of matter to explain observable phenomena.
4. Visualize and apply chemical and mathematical models.
5. Design, conduct, and analyze experiments safely and successfully.
6. Develop the study skills and habits of independent learners.
7. Articulate chemical knowledge and understanding in a written context.

### **Chemistry 103 Learning Environment**

We know that success in this course depends upon your ability to solve problems. Developing your problem solving skill is a key aim of this course. We will give you a lot of opportunities to practice problem solving. The most successful students devote most of their study time to problem solving. We advise you to practice problem solving every day. In emphasizing problem solving skills, we aim to cultivate your ability to connect these problems to broader chemistry concepts.

## COMPONENTS OF CHEMISTRY 103

**Learn@UW:** Much of the material for this course is only available via our Chemistry 103 Learn@UW webpage (<https://learnuw.wisc.edu/>). The site contains assignments and due dates, schedules, office hours, TA lecture notes, PowerPoint slides, course handouts, announcements, and other materials. Check Learn@UW daily for announcements, assignments, and due dates.

**Pre-class Assignments:** These assignments include readings, demos, interactive tutorials, and/or short quizzes. Pre-class assignments are *due at 8:00 am before each lecture*. No extensions to the due date will be given, and you will not receive credit for late submissions. 10% of your pre-class assignment grade will be dropped to compensate for any software problems (which should be very minimal) and for any other reasons why you may not be able to complete an assignment on time.

**Lecture:** ConcepTests and learning activities will be frequent during the lecture period.

Before your first lecture, download Top Hat to a mobile device or create an account on their website to use on your phone or laptop. Instructions on how to register and join the course are given on the Chemistry 103 Learn@UW homepage. If you have already used Top Hat in another course at UW-Madison, you should be ready to go.

You must correctly answer a question to receive credit for a TopHat question. In order to compensate for circumstances in which you miss class due to an illness or other legitimate reason, or you forget to bring your phone, your battery dies, or you are unable to connect to the internet, you will earn full credit for correctly answering a minimum of 80% of TopHat questions.

**Discussion:** Discussion activities include group problem-solving, lab preparation, exam preparation and discussion quizzes. Discussion quizzes are important opportunities to evaluate your progress in the course. Missed quizzes cannot be made up; however, your lowest quiz grade will be dropped when determining your final quiz grade.

**Online Homework (OWLv2):** The OWL homework system allows multiple attempts, each with feedback. You can log on multiple times to complete an assignment. Due dates for homework assignments will be posted on Learn@UW and OWL. No extensions to the due date will be given, and you will not receive credit for late submissions. 10% of your on-line homework assignment grade will be dropped to compensate for any software problems (which should be very minimal) and for other reasons you may not be able to complete an assignment on time. Once the due date is past, you can still access homework problems; however, you will not receive points in the course for completing them.

If you encounter technical difficulties with OWLv2 pertaining to how answers are submitted/ accepted or why you did not get credit for an answer that was actually correct, please send an email to [chem103hw@chem.wisc.edu](mailto:chem103hw@chem.wisc.edu) with your name, course number, and a brief description of the problem.

**Laboratory:** In lab, you will design experiments, learn proper laboratory techniques, interpret and analyze data, and communicate your ideas about the data through discussions with others and in writing.

Instructions for the labs and a description of the grading rubric are described in the lab manual. Unless you are formally excused, you must attend all laboratory sessions. There are no procedures to make-up laboratories you miss, and a grade of zero will be recorded for all unexcused absences.

***YOU MUST ACHIEVE A MINIMUM SCORE OF 60% IN LAB IN ORDER TO RECEIVE A PASSING GRADE IN THE COURSE.***

**Exams:** There will be three mid-term exams given during the laboratory period, and one final exam. Mark these dates on your calendar now. ***NO MAKE-UP EXAMS WILL BE GIVEN.*** If you have a religious conflict with any of these exam dates, you must report the conflict to your TA within the first week of class.

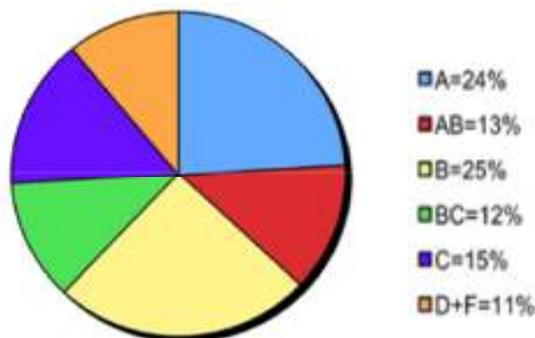
Exam 1	Thursday, July 6
Exam 2	Thursday, July 20
Exam 3	Thursday, August 3
Final Exam	Friday, August 11

## GRADES

Your grade will be based on the following assignments and assessments:

Assignments and Assessments	% Grade
Three Mid-Term Exams	33%
Pre-Class Assignments	5%
On-line Homework (OWL)	10%
Laboratory	20%
Quizzes	5%
Discussion Participation	2%
ConcepTest (TopHat) Questions	3%
Final Exam	22%

The approximate distribution of final grades is given below:



This distribution may be adjusted upwards if class performance exceeds expectations.

## RESOURCES

**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. ChemPages, and other lab resources are accessed via the "Materials for Laboratory" link.

**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.

**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 their website (<http://www.uhs.wisc.edu/services/counseling/>) or call 265-5600. Crisis intervention services are also available 24 hours a day by dialing this same phone number and pressing option 9.

## CHEMISTRY 103 COURSE AND UW-MADISON POLICIES

### Attendance

If you have a religious conflict, UW athletic commitment, UW field trip for another course, or other legitimate school related reason for missing lab, ***you must report the conflict to your TA a minimum of one week before the absence occurs, receive confirmation from your TA that your absence meets the requirements for being excused, and make arrangements with your TA to make up the lab.*** If you are seriously ill or have a family emergency and are unable to attend lecture, discussion or lab, inform your TA as soon as possible via email and make arrangements with your TA to make up the missed work.

### Academic Integrity

We expect all students to conduct themselves with honesty, integrity, and professionalism. Remember that it is not ok to simply copy and paste material from the Web or from another student into your own work. The Writing Center describes how to cite material that is not yours: <http://writing.wisc.edu/Handbook/QuotingSources.html>. Passing off someone else's lab reports or exam answers as your own work is academic misconduct. Any student caught cheating on an assignment or exam will receive a grade of zero on the assignment or exam. A second infraction will result in an F for the course. To learn more about university policies on academic misconduct, see <http://www.students.wisc.edu/doso/academic-integrity/>.

### Reasonable Accommodations

The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act, Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility.

Students are expected to inform their instructor of their need for instructional accommodations by the end of the first week of the semester, or as soon as possible after a disability has been incurred or recognized. We will work directly with you or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA.

## CHEMISTRY 103 OUTLINE AND CALENDAR

Dates for lecture topics are approximate. The exam dates are fixed. See Learn@UW for a list of all assignments and due dates.

WEEK	DATE	LECTURE TOPIC	CH.	LAB
1	M Jun 19	Introduction and Measurement	1	Tu: Citizenship in the Lab
	W Jun 21	Atoms, Elements, Molecules and Ions	2	Th: Solutions, Density and Graphing
	F Jun 23	Atoms, Elements, Molecules and Ions	2	
2	M Jun 26	Chemical Compounds and Reactions	3	Tu: <i>No Lab</i>
	W Jun 28	Chemical Compounds and Reactions	3	Th: Reaction Types and Chemical Logic (Computer Exercise)
	F Jun 30	Energy and Stoichiometry	3	
3	M Jul 3	Energy and Stoichiometry	3	Tu: <i>Independence Day-No Class</i>
	W Jul 5	Kinetic Theory	8	Th: <b>EXAM 1</b>
	F Jul 7	Kinetic Theory	8	
4	M Jul 10	Kinetic Theory/ Thermochemistry	8, 4	Tu: Reaction of Zinc and Iodine
	W Jul 12	Thermochemistry	4	Th: Synthesis of an Alum
	F Jul 14	Thermochemistry	4	
5	M Jul 17	Thermochemistry	4	Tu: Solution Calorimetry
	W Jul 19	Nature of Energy	5	Th: <b>EXAM 2</b>
	F Jul 21	Nature of Energy	5	
6	M Jul 24	Nature of Energy	5	Tu: Light, Color and Solutions
	W Jul 26	Chemical Bonding	6	Th: Project Lab
	F Jul 28	Chemical Bonding	6	
7	M Jul 31	Molecular Geometry	7	Tu: Molecular Geometry and WebMO (Computer Exercise)
	W Aug 2	Intermolecular Forces	9	Th: <b>EXAM 3</b>
	F Aug 4	Intermolecular Forces	9	
8	M Aug 7	Phases of Matter	9	Tu: <i>No Lab</i>
	W Aug 9	Phases of Matter/ Review	9	Th: Check out
	F Aug 11	<b>FINAL EXAM</b>		