

CHEMISTRY 104-1

Spring 2015

Lecturer:	Dr. Paul Hooker
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Office Hours:	10 am to 11 am M, W, F.
Lectures:	M/W/F 8:50-9:40 am, Room 1351
Labs:	Room 2325
Course Website on Learn@UW:	https://learnuw.wisc.edu/
General Chemistry Homepage:	http://genchem.chem.wisc.edu/
General Chemistry Office:	Room 1328 Chemistry 263-2424

INTRODUCTION

Chemistry 104 is the second semester course in a two-semester General Chemistry sequence. Students who take Chemistry 104 should have passed CHEM 103 with a grade C or better. 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.

REQUIRED MATERIALS

1. *Chemistry: The Central Science* (12th Ed.), Brown, LeMay, Bursten, Murphy and Woodward University Bookstore sells the Chemistry: The Central Science textbook with MasteringChemistry Technology Kit w/e-Text as a bundle for \$190.15 (hardcover) or for \$144.20 (unbound), prices subject to change. You may wish to purchase the textbook separately from the MasteringChemistry Technology Kit. Students who choose this option will still need to purchase an access code to the MasteringChemistry Technology Kit at masteringchemistry.com. MasteringChemistry is sold by Pearson as a version with the e/text of the textbook for \$110 and w/o the e-text for \$66. The ISBN numbers provided above correspond to the entire bundle. If you wish to individually purchase the textbook, the ISBN for the hard cover version is 0321696727 and the ISBN number for the unbound version is 1256337161. Lab manuals and lab notebooks will be sold in the Mill Street Atrium of the Chemistry Building during the first two weeks of classes.
2. *Chemistry 104 Laboratory Manual*, Spring 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 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 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 I-clicker2 or web-clicker) and bring it to every lecture. These can be purchased at the University Bookstore.

* Please sign any email messages to Dr. Paul Hooker with your name, TA's name & your discussion or lab section number. For example: Jaime Jones, TA: Name, Sec. 431 (or 731).

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. A MasteringChemistry 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. If you purchased a used textbook or received one from another student, **you must** purchase your own access to the MasteringChemistry system online at: <http://www.masteringchemistry.com>. **Course ID: UWCHEM104S1501**
7. USB Drive: A USB flash drive that will hold at least 2 GB is highly recommended for laboratory data collection.
8. Note packet (free!) available through the course website.

COURSE INFORMATION

Course Expectations

Upon successful completion of this course you will have acquired a foundation of knowledge in basic chemistry principles. Although there are plenty of resources to help you achieve this, the attaining this goal lies with the time, effort, and ability of the individual student.

Course Organization

There are three components of CHEM 104; Lecture, Discussion and Lab.

Lecture

There are three lectures per week each 50 mins in length. During lectures you will be introduced to concepts, work through numerical problems, watch demonstrations, and answer clicker questions (counts towards final grade). To facilitate effective note taking a note packet will be available through the course website for each chapter of study which you will bring to the class. At the end of each chapter you will have a completed note packet which will help you review for midterm exams. At the end of the course you will have a complete set of notes which will prove extremely useful not only for the final examination, but also should you be planning on taking exams for professional schools in the future, e.g., MCAT, DAT, GRE etc. As there is not enough time to complete the entire note packet in the lecture class, recordings to help you complete the note packet will be available through the course website. These can be viewed at any time, but as the course progresses you will be expected to view some of the recordings *before the lecture*. This will give time in the lecture to concentrate on the more challenging parts of the course. Augmenting your notes using the textbook as a resource will also be an effective part of your learning strategy.

With large classes respectful classroom etiquette is expected. 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 except to take notes. 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, the 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 9:40 am, but sometimes just another minute or two is needed to finish up. Please be considerate of your classmates.

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.

Discussion Section

Twice a week, you will meet with a teaching assistant (TA) and your classmates for discussion. In these meetings, you will discuss assigned homework problems, work with groups of students to learn new material or reinforce/review existing ideas, learn about upcoming laboratory 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 and fellow classmates.

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.

You must attend all laboratory sessions. There is no opportunity to make up a laboratory that you miss; a grade of zero will be recorded for unexcused absences. If you have an excuse for missing lab, notify your TA 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 your lecturer and TA at your earliest convenience.

PROBLEM SETS AND HOMEWORK

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 MasteringChemistry homework system. 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 MasteringChemistry online homework system. Due dates for assignments will be posted on the course website and also on MasteringChemistry but are typically **every Monday before the scheduled lecture**.

If you encounter technical difficulties with MasteringChemistry 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 chem104hw@chem.wisc.edu with your name, course number (104), lecture section (01), and a brief description of your difficulty. 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.*

Tips for Success

1. Be organized.
2. Keep up to date with any course announcements.
3. Prepare for lectures, labs, and discussion sections ahead of time.
4. Complete lab reports and homework assignments in a timely fashion.
5. Become part of an effective study group.

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 lecturer or your TA.

EXAMS AND QUIZZES

Quizzes. Quizzes will be given during discussion sections to help you evaluate your progress and to encourage you to memorize essential information. These quizzes count toward your final grade.

Exams. There will be three in-class exams of 60 minutes each and one comprehensive two-hour final exam. **Makeup exams will be only be arranged under extenuating circumstances and prior permission, where possible, obtained.** Exams may include questions based on the laboratory material. **Please be alert to these exam dates.** You must report any religious conflicts with exams or laboratory exercises to your teaching assistant within the first two weeks of classes.

Exam Dates:	Friday 2/13	8:45 – 9:45 AM
	Monday 3/16	8:45 – 9:45 AM
	Monday 4/27	8:45 – 9:45 AM

Final Exam: Thursday 5/14 **12:25 pm – 2:25 pm**

GRADES

Grade Distribution

Below is the letter grade distribution for this class

A	90.0%
AB	86.0%
B	80.0%
BC	76.0%
C	70.0%
CD	66.0%
D	60.0%
F	<60.0%

This distribution will never be distributed up, i.e., a student achieving 90.0% or greater will receive an A grade, however, it may be distributed down depending on the final class grade distribution.

Grading Criteria

Three 60-minute exams	13% each
Online Homework	15%
Laboratory	20%
Quizzes and Clickers	6%
Final Exam	20%
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Total	100%

Your scores are always available to you at Learn@UW.

ADDITIONAL RESOURCES

Numerous resources are available to assist you with either this course in particular or college life in general. It is up to you to take advantage of these resources to ensure your success both in this course and at UW-Madison.

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://genchem.chem.wisc.edu/>): 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. Copies of old exams from other lecturers are available in the "More for Students" section.

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://genchem.chem.wisc.edu/>) under the "More 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 their website (http://www.uhs.wisc.edu/home.jsp?cat_id=36) 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 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>

COURSE OUTLINE AND CALENDAR

The course outline appears on the next page. Dates for lecture topics are **approximate**. The exam dates are **fixed**. The course website on Learn@UW will have all specific reading suggestions and details of the specific recordings to watch and due dates as they become available.

Week	Date Range	Topics	Chapter	Lab
1	Wed - Fri 1/21 - 1/23	Unit 13: Organic and Biochemistry (Chapter 24)		No Lab
2	Mon - Fri 1/26 - 1/30	Unit 13: Organic and Biochemistry (Chapter 24)		Introduction and Molecular Structure
3	Mon - Fri 2/2 - 2/6	Complete Unit 13 Unit 14: Solutions (Chapter 13)		Aspirin Synthesis (Formal Lab Report)
4	Mon - Fri 2/9 - 2/13	Complete Unit 14 Exam I (Fri 2/13)		No lab
5	Mon - Fri 2/16 - 2/20	Unit 15: Kinetics (Chapter 14)		Biodiesel Synthesis
6	Mon - Fri 2/23 - 2/27	Complete Unit 15 Unit 16: Equilibria (Chapter 15)		Redox Titration
7	Mon - Fri 3/2 - 3/6	Complete Unit 16		Crystal Violet (Kinetics)
8	Mon - Fri 3/9 - 3/13	Unit 17: Acids and Bases (Chapter 16)		Le Chatelier's Principle
9	Mon - Fri 3/16 - 3/20	Exam II (Mon 3/16) Unit 18: Additional Aspects of Chemical Equilibria (Chapter 17)		No Lab
10	Mon - Fri 3/23 - 3/27	Complete Unit 17 Unit 18: Thermodynamics II (Chapter 19)		Copper Ammine Complex
11	Mon - Fri 3/30 - 4/5	Spring Break!		No Lab
12	Mon - Fri 4/6 - 4/10	Complete Unit 18		Acids and Bases
13	Mon - Fri 4/13 - 4/17	Unit 19 Electrochemistry (Chapter 20)		Chemical Equilibrium and Thermodynamics
14	Mon - Fri 4/20 - 4/24	Complete Unit 19		Electrochemistry
15	Mon - Fri 4/27 - 5/1	Exam III (Mon 4/27) Unit 20 Nuclear Chemistry (Chapter 21)		No Lab
16	Mon - Fri 5/4 - 5/8 5/14 12:25 pm	Complete Unit 20 Final Exam		Neutron Activation of Silver