

CHEMISTRY 104

LECTURE 2, FALL 2011

General Chemistry 104:	5 credit hours
Lectures:	TR 2:30-3:45 p.m. in Chemistry 1361
Course Web Site:	https://learnuw.wisc.edu/
Lecturer:	Dr. Linda Zelewski,
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Office Hours:	TBA

Chemistry 104 is the second semester of a two-semester sequence. Chemistry 103 and 104 provide a general survey of chemical principles and facts, and are prerequisites for advanced courses such as Organic Chemistry (341 and 343), Analytical Chemistry (327 and 329), and Inorganic Chemistry (311).

The prerequisite for Chemistry 104 is Chemistry 103. If it has been more than a semester since you took Chemistry 103, you may need to put in extra effort at the beginning of the semester to gain the necessary background.

REQUIRED MATERIALS

Textbook: *Chemistry & Chemical Reactivity*, 7th edition by Kotz and Treichel; available at local bookstores.

i>clicker: Available at local bookstores. To register your i>clicker, go to our homepage on Learn@UW and click on "Register your i>clicker". If you registered your clicker in Spring or Summer 2011, you will need to register again for Fall 2011. Bring your i>clicker to every lecture.

Lab Manual: *Chemistry 104 Laboratory Manual*, Fall 2011, Department of Chemistry, UW-Madison, available in the chemistry building lobby from Alpha Chi Sigma (cash only, \$15).

Lab Notebook: Carbonless laboratory notebook with duplicate pages, available from Alpha Chi Sigma and local bookstores. (You can continue to use your Chemistry 103 lab notebook until you run out of 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.

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

Calculator: An inexpensive calculator having capabilities for square roots, logarithms and exponentiation (antilogarithms) and exponential (scientific) notation operations is required. The calculator will be used on homework assignments, quizzes, exams and in the lab.

COURSE INFORMATION

This course has been designed and organized to help you learn chemistry, 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 this course.** This means that you will need to devote considerable out-of-class time to studying the subject. The rest of this syllabus outlines the features of the course that will help you learn.

LEARN@UW

Much of the material for this course is only available via our Chemistry 104 Learn@UW webpage (<https://learnuw.wisc.edu/>). The site contains homework assignments and due dates, schedules, office hours, TA lecture notes, course handouts, announcements, and other materials. Check this site frequently throughout the semester.

LECTURE AND DISCUSSION

Lecture: Lectures organize the material, cover the basic principles of each topic, and present illustrations and demonstrations. A lecture is not intended to describe or explain everything you should learn; rather, it will indicate what topics it is important to study and provide some insight into those topics. Read the assigned sections of the textbook prior to lecture. Take notes during lecture to capture your understanding of what you heard and saw. Sample lecture notes taken by a TA will be posted on Learn@UW (under “Content”, “Course Materials”) shortly after each lecture. These notes are meant to supplement, not replace your own notes.

Demonstrations: The UW-Madison Chemistry Department has a longstanding tradition of using lecture demonstrations to help students understand chemistry. When a demonstration is done in class, observe what happens and make certain that you understand the principles the demonstration is designed to illustrate. If you do not, ask questions, either in lecture or in your discussion section. All demonstrations are important and questions about demonstrations may appear on exams.

i>clickers: The purpose of using clickers in lecture is to reinforce concepts and to encourage student engagement. Bring your i>clicker with you to every lecture. If you answer a minimum of 80% of the lecture questions using your clicker, you will earn 20 points toward your final grade. If you answer a minimum of 40% of the questions, you will earn 10 points. You do not need to get the question correct in order to earn credit for participating.

Discussion Section: You will meet with about 22 of your classmates and your Teaching Assistant twice a week for discussion. During these meetings you will discuss and solve problems related to the assigned readings and homework, learn about upcoming laboratory assignments, and have an opportunity to ask questions. ***You will benefit most from discussion if you have prepared ahead of time.*** You should have already read the relevant material and worked some problems. Bring specific questions to discussion as it is a great opportunity for you to learn from your TA and fellow classmates.

Homework Problems: The only way to master the material in this course is by working as many problems as possible. There are twelve homework assignments during the semester, of which the highest eleven scores will count towards your grade. Homework assignments and due dates are posted on our Learn@UW homepage under “Assignments”. You are responsible for keeping track of homework due dates and submitting these on time. ***Late homework will not be accepted.***

Quizzes: Eleven quizzes will be given during the first discussion period during most weeks. Quizzes will cover the material presented in lecture during the previous week. Missed quizzes may not be made up, except under extenuating circumstances. Your ten highest quiz scores will count toward your final grade.

Classroom Etiquette: Cell phones should be turned off. 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 class (such as surfing the web, playing video games, texting, etc.) is both rude and distracting, not only for you, but for those who are sitting nearby. 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 when the bell rings, but sometimes another minute or two may be needed to finish up. Please be considerate of your classmates.

LABORATORY

The laboratory is a vital part of this course. In lab, you will develop skills that are not easily learned or demonstrated in the lecture hall. These skills include:

- Designing experiments
- Learning proper laboratory techniques
- Using laboratory equipment properly
- Interpreting and analyzing data
- Communicating your ideas through discussions with others and writing

YOU MUST ACHIEVE A MINIMUM SCORE OF 60% IN LAB IN ORDER TO RECEIVE A PASSING GRADE IN THE COURSE. Examinations may include questions based upon the laboratory material.

Laboratory Assignments: There are eleven laboratory assignments. Instructions for the labs and a description of the grading rubric are described in the lab manual.

Laboratory Preparation: Before coming to lab you need to

- Read “Preparing Yourself for this Experiment” in the lab manual, and carry out the directions given. Note that online quizzes for most experiments are available on Learn@UW as a resource. These quizzes are not a graded component of this course.
- Review relevant sections of your textbook.
- View the appropriate ChemPages on the web.
- Prepare your laboratory notebook. Before coming to lab, write a short summary statement and procedural outline of the experiment (see page xii in your lab manual for more information on what this entails), make tables to record experimental data, leave areas to record experimental observations, do any pre-lab calculations, and answer any prelab questions. An example of a prepared notebook is provided in the lab manual on pages xxxvii – xxxviii.

Your TA will check your notebook at the beginning of the lab session to make sure these requirements are met. ***If you arrive without a properly prepared notebook, you will be asked to leave the lab to correct this.*** Points will be deducted from your lab score for that assignment in accordance with the percentage of the procedure you were unable to participate in while preparing your lab notebook.

Safety in the Laboratory: The "Safety" section of the lab manual covers general safety precautions for all experiments. Each experiment also has a "For Your Safety" section with specific precautions that you should read before coming to lab. Failure to follow proper safe laboratory practices, including not wearing safety goggles, may lead to you being ejected from the laboratory and receiving zero credit for the experiment.

Safety Quiz: Read the Safety section in your laboratory manual on pages xix-xxii and take the Safety Quiz on Learn@UW (click on "Quizzes" in the toolbar and then "Safety Quiz"). ***The Safety Quiz must be completed no later than Tuesday, September 13 at 5:00 p.m.*** There is no limit on how many quiz attempts you may make, and a score of 5/5 is required to pass the quiz. Any student who does not pass the safety quiz will not be allowed into the laboratory.

Attendance: You are required to arrive to lab on time. Your TA will review safety information and any modifications to the experiment at the start of the lab period. ***If you are late and miss part or all of the prelab discussion, you may not be allowed to enter the laboratory to perform the experiment.***

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. If you have an extenuating circumstance that will require you to miss lab, notify your TA as soon as possible ***before*** the lab period, and receive confirmation from your TA that your absence meets the requirements for being excused.

Reports: For most experiments, reports are due at the end of the laboratory period unless your TA specifies otherwise. Points may be deducted if reports are turned in late. ***If you place a lab report in your TA's mailbox, it is your responsibility to send your TA an email notifying them. Lab reports turned in without email notification may not be accepted for credit.***

GRADES

Point Distribution: If no changes are made, the total number of points you can earn is 929. The point distribution is detailed below. Minor adjustments may be made during the semester if needed. You will be advised of any changes.

3 Midterm Exams @ 100 points each	300 points
Final Exam	200 points
Laboratory	200 points
Quizzes (best 10 of 11) @ 15 points each	150 points
Homework (best 11 of 12) @ 4 points each	44 points
Clicker	20 points
Laboratory Safety Quiz	5 points
Academic Honesty Assignment	10 points

Your letter grade will be determined by calculating your final percentage using the formula:

$$\% \text{ score} = (\text{total points earned} / \text{total possible points}) \times 100\%$$

There is no extra credit in this course, and assignments cannot be re-submitted to improve your grade. Lab grades will be normalized to a common scale before final grades are determined to minimize differences in grading practices between laboratory sections.

Exams: There will be three mid-term exams given during the lecture period, and one final exam. ***NO MAKE-UP EXAMS WILL BE GIVEN.***

Exams will include questions on material covered in the lectures, discussion, laboratory, and the assigned reading. The final exam will cover topics from the entire semester, but will be weighted more heavily toward material covered in the final segment of the course. You may bring one 4" × 6" note card containing any information to each mid-term exam, and 4 note cards (the original 3 plus 1 more) to the final exam. The note cards may be hand-written or computer-generated; however, the total surface area of one note card may be no greater than 48 square inches.

Exam 1	Tuesday, September 27	2:30–3:30 p.m.
Exam 2	Tuesday, October 25	2:30–3:30 p.m.
Exam 3	Tuesday, November 22	2:30–3:30 p.m.
Final Exam	Wednesday, December 21	10:05 a.m.–12:05 p.m.

Intended Grading Scale: Letter grades will be assigned at the end of the semester based on the following intended grading scale:

A	90.0%
AB	88.0%
B	80.0%
BC	78.0%
C	70.0%
D	60.0%

This scale *may* be adjusted downward at the end of the semester, depending on the overall class average. It will never be adjusted upward.

Review Your Grades: All grades will be entered electronically in Learn@UW. Be sure to review your scores regularly and notify your TA promptly of any discrepancies. ***Any discrepancies must be brought to your TA's attention before the final exam. After final grades have been released to the Registrar, no changes to grades will be made.***

RESOURCES

Numerous resources are available to assist you with this course and 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.

Your Instructors: Your TAs and I are available to help you! We all have regularly scheduled office hours and can also be contacted via email. Don't hesitate to contact me if you have questions or concerns about the course or the work you are doing. I will respond to all email messages (zelewski@wisc.edu) either directly or, when appropriate, in the next lecture. I also welcome questions after lecture and I am available by appointment. **Make sure to include "Chem 104 Sec 42X" in the subject line to guarantee that your email will be read.**

Course Web-site on Learn@UW (<https://learnuw.wisc.edu/>): The site contains homework assignments, due dates, schedules, office hours, TA lecture notes, course handouts, announcements, and other materials.

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. Copies of old exams from other lecturers are available in the "More for Students" section.

Study Groups: Students are strongly urged to form groups of several students in order to study together outside of class and to collaborate on working homework assignments and laboratory discussion questions. A study group reflects the teamwork inherent in the way modern science is normally carried out at academic institutions – namely, scientists often collaborate with one another, either within the same university and/or with individuals or groups elsewhere. However, it is important to realize that although you may collaborate with other students on assignments, *the work you turn in must be your own*. Thus, you must turn in an individual write-up (not a copy of the study group's work) of your laboratory assignments. It has been found that students who interact with one another via Study Groups do significantly better in mastering the material in this course.

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 "More for Students" section.

Study Skills: The Greater University Tutoring Service (GUTS) offers a Study Skills program that teaches efficient study habits to help you make the most of your time. They offer assistance with procrastination and time management, motivation, concentration, exam preparation, note taking, test taking, and test anxiety (<http://guts.studentorg.wisc.edu/ss/index.html>).

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.

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. Students needing accommodations for this class should schedule a confidential meeting with Dr. Zelewski during the first week of classes to discuss arrangements.

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. This penalty includes incidents such as looking at another student's paper during an exam or altering an exam after it has been graded and then submitting it for re-grading. Any student caught cheating on homework assignment, quiz or lab (for instance, copying another person's work, bringing lab notebook pages from another student to the lab 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 UW policies on handling misconduct can be found at: <http://www.wisc.edu/students/saja/misconduct/UWS14.html>.

You are responsible for understanding what constitutes academic misconduct. If you do not understand, you should consult the hyperlink above, or discuss this further with Dr. Zelewski. Note that if an assignment is completed as a group (for example, a group lab report or research paper), ***all group members are responsible for ensuring that the assignment meets the standards for academic conduct.*** All group members who contributed to an assignment that is found to violate the standards for academic honesty will be held equally responsible. If you are placing your name on an assignment, it is your responsibility to ensure that assignment was completed with integrity. If you believe that a member of your lab group is committing academic misconduct, you should notify your TA. Students who assist other students in committing academic misconduct are also in violation of UWS 14.

Academic Honesty Assignment: Read the “Statement on Academic Integrity” on pages xxiii-xxiv in your lab manual, and sign the tan form in your lab manual and give it to your TA. Complete the Academic Honesty Assignment on Learn@UW (click on “Quizzes” and then “Academic Honesty Assignment”). ***This assignment must be completed no later than Tuesday, September 13 at 5:00 p.m.*** You will not be permitted to participate in any of the laboratory exercises until both portions of this assignment have been completed.

CHEMISTRY 104-2 SCHEDULE*

WEEK	DATE	LECTURE TOPIC	READING	HOMEWORK & QUIZ	LAB
1	Sep 6 Sep 8	Review of Ch. 8 & 9 Organic Chemistry	8, 9, 10.1–10.2	HW1	Check In/ Lab Quest Exercises (Handout)
2	Sep 13 Sep 15	Organic Chemistry Organic Chemistry	10.2–10.4, Appendix E	HW2, Q1	Molecular Structures
3	Sep 20 Sep 22	Organic Chemistry Organic Chemistry	10.3–10.5, pp. 496-512	HW3, Q2	Preparation of Aspirin and Some Flavoring Esters (Formal Lab Report)
4	Sep 27 Sep 29	EXAM 1 2:30–3:30 p.m. Coordination Compounds	22.1, 22.3–22.4, 22.6		<i>No Lab</i>
5	Oct 4 Oct 6	Kinetics Kinetics	15.1–15.4	HW4, Q3	Synthesis of Biodiesel
6	Oct 11 Oct 13	Kinetics Kinetics, Thermodynamics	15.4–15.6, 19.1–19.5	HW5, Q4	Neutron Activation of Silver
7	Oct 18 Oct 20	Thermodynamics Chemical Equilibria	19.6–19.7, 16.1–16.4	HW6, Q5	Crystal Violet
8	Oct 25 Oct 27	EXAM 2 2:30–3:30 p.m. Chemical Equilibria	16.4–16.6		<i>No Lab</i>
9	Nov 1 Nov 3	Acids & Bases Acids & Bases	17.1–17.9	HW7, Q6	Chemical Equilibrium & Thermodynamics
10	Nov 8 Nov 10	Aqueous Equilibria Aqueous Equilibria	18.1–18.2	HW8, Q7	Chemical Equilibrium & Le Châtelier's Principle (Formal Lab Report)
11	Nov 15 Nov 17	Aqueous Equilibria Aqueous Equilibria	18.3	HW9, Q8	Acid & Base Solutions
12	Nov 22 Nov 24	EXAM 3 2:30–3:30 p.m. <i>Thanksgiving Day-No Classes</i>			<i>No Lab</i>
13	Nov 29 Dec 1	Solubility Complex Formation	18.4–18.7	HW10, Q9	Copper Ammine Compounds (Formal Lab Report)
14	Dec 6 Dec 8	Electrochemistry Electrochemistry	20.1–20.5	HW11, Q10	Electrochemical Cells/ Check-out
15	Dec 13 Dec 15	Electrochemistry Electrochemistry	20.6–20.8	HW12, Q11	<i>No Lab</i>
FINALS	Dec 21 (W)	FINAL EXAM 10:05 a.m. - 12:05 p.m.			

*The schedule for Lecture Topics, Homework and Quizzes is tentative and may be adjusted during the semester as needed. You will be advised of any changes. For a complete listing of all assignments, including homework problems and due dates, see our Learn@UW homepage.