

# CHEMISTRY 104

Lecture 1, Fall 2014

**Read This Syllabus Today  
Keep It for Future Reference**

|                       |  |
|-----------------------|--|
| General Chemistry 104 | 5 credit hours   |
| Lectures:             | 9:30-10:45 AM TR 1351 Chemistry  |
| Lecturer:             | Professor Silvia Cavagnero<br>5351 Chemistry (262-5430) <a href="mailto:cavagnero@chem.wisc.edu">cavagnero@chem.wisc.edu</a> |
| Office Hours:         | T 4:35-5:35 PM, R 1:20-2:20 PM or email for appointment.   |
| Quizzes               | Given in the second discussion section each week   |
| Website (Moodle)      | <a href="https://ay14-15.moodle.wisc.edu/">https://ay14-15.moodle.wisc.edu/</a>  |
| General Chem Website  | <a href="http://genchem.chem.wisc.edu/">http://genchem.chem.wisc.edu/</a>  |
| Undergraduate Office  | Room 1328 Chemistry, 263-2424  |

*Chemistry 104 is the second semester of a first-year course in college chemistry. Students in Chemistry 104 are presumed to have taken Chemistry 103 or its equivalent.*

## Required Material

Unless you already have it, you will need to purchase each item. These are the only required items for this lecture.

**Textbook:** Either *Chemistry: The Central Science*, 12<sup>th</sup> ed. Brown et al., 2012, or *Chemistry: The Molecular Science*, 4<sup>th</sup> ed. Moore, Stanitski, Jurs, Brooks/Cole 2011 is OK. A course schedule with reading assignments from either textbook is available in the Moodle course.

**Lab Book:** *Chemistry 104 Laboratory Manual, Fall 2014* Chemistry Department, University of Wisconsin-Madison; available in the chemistry building lobby from Alpha Chi Sigma, cash only.

**Lab Notebook:** Carbonless laboratory notebook with duplicate pages available from Alpha Chi Sigma or local bookstores. (You can continue to use your 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 completely seal around the eyes and fit over regular glasses can be purchased from local bookstores.

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

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

## Web-Based Course Materials and Class Emails

To access Web-based materials, you must have activated your UW-Madison NetID so you have an ID and password. You probably have already done this. If not, activate your NetID by going to <https://www.mynetid.wisc.edu/activate>, entering your ID number, and following the directions.

Much information about this course will be transmitted via email, using an automated email list based on registration in the course. An email was sent to everyone on this list on August 22. If you did not receive such an email, you either were not yet

enrolled in Chem 104 or you are not reading your @wisc.edu emails. It is best to use your @wisc.edu email for UW-Madison communications. You can tell your other email accounts to forward to your @wisc.edu email account, or *vice versa*.

## Technology Enhanced Learning: Moodle Web Site

Much of Chem 104 is only available via **Moodle**, a course management system similar to Learn@UW. You automatically have access to the 104 materials in Moodle if you are enrolled in this course. You can use Moodle on your own computer, a friend's computer, or any other computer on campus. Many students access it from a smart phone or a tablet computer. Direct your Web browser to <https://ay14-15.moodle.wisc.edu/>. If necessary, log in by entering your NetID and Password. Look for Chemistry 104, Fall 2014. Click on Chemistry 104, Fall 2014 to see your assignments; this is the main course.

Log in to Chemistry 104, Fall 2014, Lecture 1 in Moodle as soon as possible. Using the link in the center panel, or on the Quizzes page (Quizzes is in Assignments panel on the left), work on the **Practice Quiz**, which is designed to check your computer to make sure it will do everything you will need during the semester. Do the Practice Quiz on the computer you are most likely to use for online homework assignments and tutorials this semester. Even if some things don't seem to work right, answer all of the practice quiz questions, submit your quiz for grading, and view the results. There will be feedback about the things that did not work that will help you get your computer set up. The **Practice Quiz is due at 11:55 PM, Monday, Sept. 8**, but don't wait until the last minute to do it. If you have trouble getting your own computer to do the Practice Quiz, use a computer in the chemistry building to complete the assignment. If you change computers during the semester, do the Practice Quiz on the new computer to be sure everything works.

Also begin to work on **Homework 1** and **Academic Honesty Quiz**, which are **due at 11:55 PM on Mon, Sept. 8**.

## Safety Quiz

**Before your lab period the week of Sept. 7**, you must take a **Safety Quiz** and achieve a perfect score. The Safety Quiz is available in Moodle under the second week's assignments or on the Quizzes page. If you carefully read the safety pages (pp xix to xxii) in your lab manual before taking the Safety Quiz, you should have no difficulty getting a perfect score.

## 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 reasonable arrangements. If you have special needs, please contact Prof. Cavagnero and your 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.

## Plagiarism and Academic Misconduct

You will be writing laboratory reports and answers to questions on Moodle homework in this course. It is not OK to simply copy and paste material from the Web into these reports or answers, nor to copy something written by another student. The UW-Madison Writing Center has a good description of how to paraphrase or quote material that you did not write yourself. It is available at <http://writing.wisc.edu/Handbook/QuotingSources.html>. Also read Appendix 3, "Writing for the Sciences", pp A3-1 to A3-6 in your laboratory manual. This gives good information about how to write up an experiment, including how to cite references. Copying lab results or answers to quizzes, homeworks, or examinations 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. The UW-Madison statement on academic misconduct is available at <http://students.wisc.edu/saja/misconduct/UWS14.html>. More information is provided later in this syllabus.

**The complete syllabus is in Moodle at <https://ay14-15.moodle.wisc.edu/>. Use Moodle to read it NOW. It contains information about how your final grade will be determined and much more.**

## Midterm and Final Exam Schedule

There will be three midterm exams of 75 minutes each and a two-hour final exam. No make-up exams will be given. All exams will include questions based on laboratory as well as lecture and discussion.

|            |          |               |              |                         |
|------------|----------|---------------|--------------|-------------------------|
| Exam I     | Tuesday, | September 30, | 5:45-7:00 PM | Room to be announced    |
| Exam II    | Tuesday, | October 28,   | 5:45-7:00 PM | Room to be announced    |
| Exam III   | Tuesday, | November 25,  | 5:45-7:00 PM | Room to be announced    |
| Final Exam | Tuesday, | December 16,  | 2:45-4:45 PM | Room(s) to be announced |

Please let Prof. Cavagnero know as soon as possible if you have any conflicts with the above exam times.

## Course Organization

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 the 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.

Throughout Chemistry 104 emphasis will be placed on understanding chemistry and learning to think effectively in solving scientific problems. However, **to think effectively and to understand problems, it is necessary to have a basic knowledge of facts and terms: a vocabulary of chemistry.** Most of this background and vocabulary should have been obtained from Chemistry 103 or its equivalent. From time to time, in order to understand the new material in this course, you may need to review material you studied last semester (or whenever you took Chemistry 103 or its equivalent). Chemistry is cumulative; what you learn this semester will build upon background material that you learned earlier.

### Lectures.

During lectures we will discuss principles, outline goals, and present illustrations and demonstrations. A lecture is not intended to describe or explain everything you should learn; rather, it will indicate what topics are important for you to study and should provide some insight into those topics. Lecture will also give you an opportunity to think about these topics and see if you understand them. You should take notes during lecture, but this should not be a passive, unthinking process. **Your notes should reflect your understanding of what you heard and saw, not just a repetition of what the lecturer said or wrote on the chalkboard.** Sample lecture notes taken by a TA will be posted in Moodle (under Course Information) shortly after each lecture. Do not expect to learn everything you need to know from the lectures; you will learn far better by working on your own or with a group of other students outside of class. The lectures will indicate what is important to study and provide insights into course topics, **but the lecturer cannot learn for you. Learning is something you have to do.** Most lectures will have associated **lecture slides** that will be shown in class. These slides are an important aspect of your learning experience, and will be **available on Moodle by 10 pm the night before class, in PDF format.** It is highly recommended that you **print out the slides and bring a hard copy of the slide document along to class.** The slides printouts will have plenty of room available to add your own handwritten notes, which you are highly encouraged to take during class. Given that some of the slide packets may not be completely covered on a given lecture day, be sure to **bring along to class the slide packets associated with both the previous and current lectures.**

**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 show important facts that will be useful later on in chemistry and other science courses, or in everyday life. The UW-Madison Chemistry Department has a tradition of using lecture demonstrations to help students understand chemistry. **When a demonstration is done in class, make careful observations of what happens, write them in your notes, and make certain that you understand the principles the demonstration is designed to illustrate.** If you do not understand a demonstration, ask questions, either in lecture or in your discussion section. Take notes on what you saw, heard, smelled or otherwise experienced. Some demonstrations will not be explained in detail in lecture; instead you will need to discuss them with your TA in discussion section to arrive at a complete understanding of what occurred. All demonstrations are important, and **questions about observations or principles that have been presented via demonstrations often occur on examinations.**

### Discussion/Laboratory Sections.

A group of 22 or fewer students constitutes a discussion/laboratory section supervised by one Teaching Assistant (TA). Discussion sections are for questions, help, review, and problem solving relevant to recent lectures, homework, laboratory

experiments, computer exercises, and other assigned material. You should be prepared when you come to the discussion class. This means that you should have at least tried to work out the homework problems. Ask specific questions of your TA. Make sure you understand the questions and the answers given by your TA and fellow students.

In laboratory you will have the opportunity to do chemistry and to apply experimental techniques to solving chemical problems. The lab manual and experiments change each year, so do not purchase an old lab manual.

### **Student Board.**

So that I obtain feedback from students, I would like to set up a Student Board of Directors consisting of one representative chosen from the students assigned to each TA. The board will meet with me on approximately a weekly schedule to discuss course policies and course content. Student Board meetings will be at 4:35 PM on Thursdays and will last no more than 40 minutes. If this time fits your schedule and you are interested in joining the board, send an email message to [cavagnero@chem.wisc.edu](mailto:cavagnero@chem.wisc.edu) to let me know. In your message indicate why you want to be on the board and what qualifications you have for being a member. Also give your discussion section number (a three-digit number between 401 and 416) and the name of your TA (if you know it).

## **Gen Chem Web Site and Computer Room**

Course information is also available on the Gen Chem Web Site for Chemistry 104, Lecture 1. The URL is <http://www.chem.wisc.edu/content/genchem-main> and most of what you need is under “Information for Students” or in the lab section. Often the same information is available on both the Gen Chem and the Moodle Web sites, but you need to be familiar with both, because some information may be available on only one of these sites, or one site might be down. Always check both sites before deciding that you cannot find what you want.

All of the software you need for this course as well as access to the Internet and Moodle is available in the General Chemistry Computer Room, room 1327 on the first floor of Chemistry. If you have trouble with running software for any of your assignments on your own computer or on a computer at some other location, you can always go to the Gen Chem Computer Room to do the assignment.

## **Weekly Moodle Online Homework.**

Online Homework will be available via Moodle. You can do each Online Homework three times and your highest score will count. It is to your advantage to start the Online Homework early, because it will provide you with study guidance. Because only your highest score counts, you can use the guidance to direct your study during the week and then score well on the third try near the deadline. The Online Homework is due every Friday at 11:55 PM (except for the first week of classes and weeks when there is an exam—see schedule).

Online Homework questions provide feedback that should help you figure out how to approach similar problems on quizzes or exams.

## **Laboratory**

The laboratory is extremely important to an understanding and appreciation of chemistry. Examinations will include questions based upon the laboratory material. Each laboratory experiment will have its own criteria for grading and your TA will apply those criteria to evaluating your work. **You must successfully complete the laboratory assignments (including Excel assignment), achieving a score of 137 points (62.5%) or more, in order to receive a passing grade in the course.**

In some cases you will need to work with other students in your lab to devise an experimental procedure to solve a problem. We encourage you to discuss your work with your fellow students and TA while doing the experiment. However, your lab write-up must be done as indicated in the lab manual, which often means an individual write-up. A more detailed description of how lab work will be carried out is provided in the lab manual.

**Pre-lab Quizzes.** Laboratory work requires preparation and planning. You are required to prepare for each experiment as described in the lab manual. If you cannot show your TA that you are adequately prepared, you will not be permitted to do the experiment. You are required to take a Pre-lab Quiz for most labs. The quiz will check whether you have studied the online ChemPages Laboratory Resources listed in the lab manual for each experiment. You will be expected to complete and hand in most labs during the lab period, and you will not be able to do this unless you read the experimental directions and prepare your lab notebook ahead of time. Pre-lab Quizzes will be available via Moodle. You can take each Pre-lab Quiz twice and your higher score will count. Pre-lab Quizzes must be completed one hour before you go to your scheduled laboratory class; that is, if you have lab at 2:25 PM on Monday, you must take the Pre-lab Quiz for that week before 1:25 PM on Monday.

**ChemPages Laboratory.** You will be able to access this interactive, Web based encyclopedia of laboratory techniques using your own computer, or from the general chemistry computer room. ChemPages Laboratory contains multimedia demonstrations of the laboratory techniques that you will use in Chemistry 104. For almost every laboratory one or two ChemPages sections will be assigned. You should complete these before coming to lab and before taking the Pre-lab Quiz. Your lab manual indicates which ChemPages modules you need for each lab. The URL for ChemPages Laboratory is <http://chem.wisc.edu/deptfiles/genchem/lab/labdocs/index.htm>.

## Quizzes.

**Quizzes** will be given every week in the second discussion section, except the first week of classes and the week of an exam. Each quiz will contain several questions, some of which will be designed to help you learn to apply several ideas to a more realistic situation than most problems at the ends of the chapters in the book or on the homework. Questions that combine concepts are often encountered on exams, and the quizzes are designed to help you learn how to answer the types of questions you will encounter on exams and in real-world situations.

Quizzes will cover mainly material from each week's lectures, homework, and other assignments. Material from the previous week (and sometimes earlier) will be included. The more complicated questions will cover material from the week prior to the week of the quiz and from the week of the quiz as well.

## Biomolecules Tutorials

Seven Biomolecules Tutorials (Proteins 1, Proteins 2, DNA 1, DNA 2, Lipids, Carbohydrates, and Enzymes) are available on the Gen Chem Web site at <http://chem.wisc.edu/deptfiles/genchem/netorial/index.htm>. The tutorials complement the lecture and textbook material on biochemistry and the content of the tutorials will be included on exams. There are four quizzes that accompany the tutorials, one for Proteins 1 and 2, one for DNA 1 and 2, one for Lipids and Carbohydrates, and one for Enzymes. To get credit for doing the tutorials, you must complete the four quizzes, which are available in Moodle.

## Safety Quiz, Academic Honesty Quiz, Practice Quiz, and Surveys.

The Safety Quiz must be passed with a perfect score before you can begin lab work. Therefore you should study the safety information in your laboratory manual and take the Safety Quiz as soon as possible. You must complete the Safety Quiz before your laboratory session the week of September 8. You can take the Safety Quiz as many times as necessary to attain a perfect score.

The Academic Honesty Quiz must be completed with a perfect score by 11:55 PM on Monday, September 8. If you read the material in the Lab Manual regarding academic honesty, you should be able to pass this quiz easily.

The practice quiz assignment is designed to make certain that the computer you will use for homework assignments will show you all the things you need to see, such as molecular structures and Quicktime movies. You can do the practice quiz as many times as you need to until you get your computer set up properly. As soon as possible, use your own computer or the computer you plan to use for homework and other course assignments to log into Moodle, try the practice quiz, and note which questions (if any) you have trouble with. If you cannot see what you are supposed to see, guess at the answer to that question, have the homework graded, and then follow the directions in the feedback for the questions you had trouble with. If there are problems you cannot fix by yourself or with the help of your roommate or friends, contact Rachel Bain ([rbain@chem.wisc.edu](mailto:rbain@chem.wisc.edu)) by email and ask for help.

There will be a Survey after the first exam and at the end of the semester. Surveys are designed to collect information about your experience in this course. The End-of-Semester Survey will not be available until the last week of classes and it must be completed before 11:55 PM on Thursday, December 11, the last day of lecture in this course. You will receive 5 points credit for completing each survey.

## TA Personal Evaluation

This provides a means for your TA to evaluate your overall performance in discussion section and in lab. Your grade will be based on your attendance, preparation, and effective participation in discussion and lab.

## Grades

Your grade will be based on a maximum of 1000 points divided as follows:

|  |             |
|--|-------------|
| Twelve weekly Online Homeworks (Moodle) @ 10 points each<br>(due every Friday at 11:55 PM)   | 120 points; |
| Laboratory: ten experiments and Excel assignment @ 20 points each<br>(each week's experiment is listed in the Course Assignment Schedule;  | 220 points; |
| Eight Moodle Pre-Lab quizzes @ 3 pts each (see Course Schedule<br>for experiments that have pre-lab quizzes)   | 24 points;  |
| Ten Quizzes @ 10 points each<br>(Quizzes will be given in the second discussion section each week)   | 100 points; |
| Four biomolecules quizzes (based on seven biomolecules tutorials)<br>@ 5 points each   | 20 points;  |
| Three Special Quizzes, two Surveys @ 5 points each<br>(Safety Quiz due before first lab; Practice Quiz and Academic<br>Honesty Quiz both due Monday, September 8, 11:55 PM;<br>Mid-Semester Survey due after first exam, date TBA;<br>End-of-Semester Survey due Thursday, Dec. 11, 11:55 PM.) | 25 points;  |
| TA Personal Evaluation @ 21 points   | 21 points;  |
| Three 75-min. exams @ 90 points each<br>(dates are listed in the Course Assignment Schedule)   | 270 points; |
| Final Exam<br>(Tuesday, December 16, 2:45-4:45 PM, room to be announced)   | 200 points. |

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Total 1000 points

### Letter Grades.

Final grades will be based upon the absolute scale shown below. If you score the number of points indicated, then you will receive the letter grade indicated, regardless of how many other students achieve the same grade. There is no curve. Therefore it is to your benefit (and to your friends' benefit) that you help other students learn and they help you learn.

|    |                    |
|----|--------------------|
| A  | 900 points or more |
| AB | 870 to 899 points  |
| B  | 790 to 869 points  |
| BC | 760 to 789 points  |
| C  | 630 to 759 points  |
| D  | 580 to 629 points  |

If necessary, laboratory grades will be normalized to a common scale at the end of the semester to minimize differences in grading practices among sections. Each item that contributes to your grade has been described earlier in this syllabus.