CHEMISTRY 104
Lecture 3, Spring 2013

Read This Syllabus Today
Keep It for Future Reference

General Chemistry 104 5 credit hours
Lectures: 1:20 PM MWF 1351 Chemistry
Lecturer: Professor John W. Moore
1305 Chemistry (262-5154) jwmoore@chem.wisc.edu
Office Hours: T, R 4:30-5:30 PM or email for appointment.
Lecture Help Session: 1:20-2:10 PM most Fridays
Quizzes Given in the second discussion section each week
Website (Moodle) https://courses.moodle.wisc.edu/
General Chem Website http://genchem.chem.wisc.edu/
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: A free, online textbook is available for this course, so no textbook purchase is necessary. Many students prefer to also have a printed textbook. Either Chemistry: The Central Science, 12th ed. Brown et al., 2012, or Chemistry: The Molecular Science, 4th 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, Spring 2013, 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 January 17. If you did not receive such an email, you probably 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: Online Textbook; Moodle Web Site

A free, online textbook is at http://chempaths.chemeddl.org/services/chempaths/. In the menu in the middle of the screen, click on “How to Use This Site”. When you finish, click on “Chemistry 104, Lecture 3, Spring 2013” (right sidebar) to go to the textbook. The textbook is keyed to each lecture in the course, so the first entry you want is Exam 1 Material, W Jan 23.

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. Direct your Web browser to https://courses.moodle.wisc.edu/. If necessary, log in by entering your NetID and Password. Look for two courses: Chemistry 104, Spring 2013; and Chemistry 104-109 Study Questions. Click on Chemistry 104, Spring 2013 to see your assignments; this is the main course. Chemistry 104-109 Study Questions provides additional questions like the homework questions in the main course, for extra practice.

Log in to Chemistry 104, Spring 2013, Lecture 3 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. The Practice Quiz is due at 11:55 PM, Monday, Jan. 28, 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, Academic Honesty Quiz, and Survey 1, which are due at 11:55 PM on Mon, Jan 28.

Safety Quiz

Before your lab period the week of Jan 28, 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. Moore 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. 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 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://courses.moodle.wisc.edu/. Use Moodle to read it NOW. It contains information about how your final grade will be determined and much more.
This means you need to at least worked out the experiments, computer exercises, and other assigned material. You should be prepared when you come to the discussion class.

Discussion sections are for questions, help, review, insights into course topics, and problem solving relevant to recent lectures, homework, laboratory, and problem solving. Ask specific questions of your TA. Make sure you understand the questions and the answers given by your TA and fellow students.

### Midterm and Final Exam Schedule

There will be three midterm exams of 50 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.

<table>
<thead>
<tr>
<th>Exam</th>
<th>Date</th>
<th>Time</th>
<th>Location</th>
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<tbody>
<tr>
<td>Exam I</td>
<td>Wednesday,</td>
<td>February 20,</td>
<td>Room 1351 or another room</td>
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<td>1:20-2:10 PM</td>
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<tr>
<td>Exam II</td>
<td>Wednesday,</td>
<td>March 20,</td>
<td>Room 1351 or another room</td>
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<td>1:20-2:10 PM</td>
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<tr>
<td>Exam III</td>
<td>Friday,</td>
<td>April 26,</td>
<td>Room 1351 or another room</td>
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<td></td>
<td>1:20-2:10 PM</td>
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<tr>
<td>Final Exam</td>
<td>Tuesday</td>
<td>May 14,</td>
<td>Room to be announced</td>
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<td>5:05–7:05 PM</td>
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### 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 than 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 you may need to review material you studied last semester (or whenever you took Chemistry 103 or its equivalent) in order to understand the new material in this course. 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 it is important 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.**

### 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 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. 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.

### Friday Sessions.

The regular class time each Friday (except for the first week of classes and the week of an exam) may be used for a help session in room 1351. If there is still material on which I have not lectured on Monday and Wednesday, Fridays may also be used for lecture, but often no formal presentation or lecture will be made. You are welcome to come with any questions, comments, suggestions, or other concerns and discuss them. Or email me ahead of time with questions or topics you would like me to discuss.

### 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 book and experiments change each year, so do not purchase an old lab book.

**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 in each discussion/lab section. The board will meet with me on approximately a weekly schedule to discuss course policies and course content. Student Board meetings will be at 1:20 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 jwmoore@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 441 and 456).

**Online Textbook.**

A textbook for this course is entirely online and is available at zero cost to you. The textbook will continue to be available online after the course is over and you will continue to have access to it for at least two years. The textbook contains the usual text, equations, and figures, but it also contains videos, animations, molecular structures that can be manipulated with your mouse, and other features. Mousing over some words will give you a definition, and clicking on an element name will take you to information about that element. We would like to hear from you about how you like these features and how you use them. You can pass the word along to the Student Board member from your section, email your comments to Prof. Moore, or enter comments into a forum in Moodle.

Because the textbook is online, you will be able to use it in new and different ways. Instead of making notes in the margin and highlighting different passages, you will be able to annotate your personal copy of the textbook and also to share your annotations with others in the class (or the world). The online tool that allows this is called Diigo. Diigo is a social bookmarking tool built for academics. Social bookmarking is a relatively new technology that involves storing your bookmarks, or links to websites, online and sharing them with others. Various sites, such as del.icio.us or digg allow users to access sites which others have found to be useful and share them. Diigo focuses on people who want to manage websites as research and learning tools. It allows you to store your bookmarks in personal Lists and to share bookmarks with specific Groups (such as the 104 class in general, your section, or just your study partners). It also allows you to highlight text online and to put sticky notes on these websites to be viewed later. You can make private annotations for your personal study, or share them with others. You can even put a sticky note online and ask your TA to respond to a question about a specific page or paragraph in your online textbook.

**Using Diigo.** To use Diigo, you must register for their site. Registration and use of Diigo is not required, but it is highly encouraged. At the ChemPaths (textbook) website (http://chempaths.chemeddl.org/services/chempaths/), you will find that instructions for using Diigo are part of the pathway called “How do I use this site?”. The instructions will take you through the process of registration and learning specific tools. Once you have registered, you should join the 104 group by going to this URL: http://groups.diigo.com/group/chem104_3_spring_2013 and clicking on the orange-yellow “Join Group” button. You should be able to join the group automatically. You can also feel free to make your own groups, if you would like. One important note: Always be aware of whether you are posting sticky notes or highlights publicly, privately, or to certain groups. Until you get the hang of things, it is probably better to post to the 104 group rather than publicly.

**Using Your Textbook.** We recommend that you read the assigned sections of the textbook prior to each lecture. Each section is identified by the date of a lecture, so you would read the section “W Jan 23” under the heading “Exam 1 Material” before the first lecture. Take the time to carefully review the illustrations, equations, animations, videos, and graphs in your online textbook. Visualization is an important tool that chemists use to understand the world, especially when thinking about molecular structure. Try to make your reading an active process; keep track of those concepts that are confusing, so you will be able to pay especially close attention to those concepts are covered in class. As soon as possible after class, try to work the sample exercises without looking at the answers. When you understand the sample exercises, practice your problem solving skills by working the related online homework questions or the extra questions in the Chemistry 104 Study Questions Moodle site for that material. Many of these will be directly linked to the online textbook sections. Review the learning/exam objectives that relate to a given topic as you study.

The online textbook has several advantages. In many parts of the textbook there are animations, videos, interactive molecular structures (Jmol), and other interactive features. Also, the online homework will direct you to the parts of the online textbook that are appropriate for you to study if you miss any of the homework questions. Just click on the relevant link and your browser will take you to the part of the online textbook you need to study. Many students have found it helpful to open both your homework and your textbook in separate windows.
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. Most of the feedback is keyed to sections in the online textbook.

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, 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 each lab. 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 7:45 AM on Tuesday, you must take the Pre-lab Quiz for that week before 6:45 AM on Tuesday.

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.

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, though earlier material will sometimes be included. The more complicated questions will cover material from the week prior to the week of the quiz and perhaps 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](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 Jan 28. 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, January 28. 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) by email and ask for help.

There will be a Survey at the beginning of the semester and one at the end of the semester. Surveys are designed to collect information about your experience in this course. Survey 1 must be completed by 11:55 PM on Monday, January 28. 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 Friday, May 10, the last day of classes.

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.

Chem 104 Wiki Project

This semester we will begin development of a wiki that will consist of useful information for Chem 104 students contributed by Chem 104 students. Part of your grade this semester will be based on your contributions to a wiki that will be written by the entire class. A wiki is a collaborative website in which the content is added and edited freely. The wiki that our CHEM 104 class will construct will be a free resource that anyone enrolled in the class may use. We expect that the quality of the wiki will be high and that it will serve as a resource for future Chem 104 classes as well. Original contributions to the wiki are part of the required coursework and you may also earn extra credit by editing prior contributions from your classmates.

The goal of using this interactive website is to determine the effect of this type of medium on student performance in general chemistry. A chemical education research project is being conducted by a graduate student researcher (Jackie Brown) during the course of the semester and you may participate in it if you decide to give consent. If you have any questions concerning this study, you may contact Jackie Brown at jackie.brown@chem.wisc.edu.

**Mandatory wiki contributions:** One wiki contribution per exam period is required (see “Wiki Contribution Guidelines” in Moodle) and must be entered and saved on the wiki by noon (12:00 P.M.) the day before the exam. Each contribution is worth up to 5 points.
You will be assigned to a concept (e.g. “Rate laws”). You may choose to contribute to any page within that concept, and will be required to make one entry. For example, you could write a paragraph describing factors governing the rate of a reaction or you could supply a figure that defines rate of reaction or you could supply a practice problem about rate of reaction.

Once you have contributed to an entry, you may go back at any time and edit your entry. However, please do not start any additional entries until the six required entries on that particular page have already been completed by other students. Also, please do not edit or add content to any entry where another student has started contributing. You may not contribute to topics on future exams until the current exam is finished.

Final Exam Contributions (due by noon, Friday, May 10): Between Exam 3 and the final exam, a relatively smaller portion of material will be covered compared to the first three exams so it will be harder to find a concept to contribute to. Therefore, after exam 3, all previous pages of wiki content will become available to edit. If you are unable to find an open page to contribute to, you may edit previous portions of the wiki in an analogous fashion to earning extra credit (see next paragraph). You may earn 0, 3, or 5 points for your mandatory final exam contribution depending on the number of edits you make. Five edits will result in the maximum five point allotment.

Extra credit contributions: Once an exam period is over, you may go back to the previous exam topics and edit the wiki for extra credit. Edits may consist of (a) adding additional content, or (b) reformatting the wiki text to be more legible and visually appealing. You may not edit your own contributions for extra credit. For every exam period, you can earn up to five points of extra credit, i.e. one point for every edit. You can only edit the previous exam’s topics for extra credit, i.e. you can only earn up to 5 points during any given exam period.

Point breakdown: Contribution Number of points

<table>
<thead>
<tr>
<th><em>Mandatory</em> entry due by 12:00 P.M. the day before each exam</th>
<th>4 entries × 5 points = 20 points</th>
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</thead>
<tbody>
<tr>
<td>Optional edits on exam 1 topics due by 12:00 P.M. the day before Exam 2</td>
<td>0-5 edits × 1 point = 0-5 points</td>
</tr>
<tr>
<td>Optional edits on Exam 2 topics due by 12:00 P.M. the day before exam 3</td>
<td>0-5 edits × 1 point = 0-5 points</td>
</tr>
<tr>
<td>Optional edits on exam 3 topics due by 12:00 P.M. the day before final exam</td>
<td>0-5 edits × 1 point = 0-5 points</td>
</tr>
<tr>
<td>Total</td>
<td>20 points (up to 35 points)</td>
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Grades

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

- Twelve weekly Online Homeworks (Moodle) @ 10 points each (due every Friday at 11:55 PM) = 120 points;
- Laboratory: eleven experiments @ 20 points each (each week’s experiment is listed in the Course Assignment Schedule; 20-point total includes Pre-Lab Quizzes in Moodle if they are available) = 220 points;
- Nine out of ten Quizzes @ 10 points each (lowest score dropped) (Quizzes will be given in the second discussion section each week) = 90 points;
- Seven Biomolecules tutorials and four biomolecules quizzes @ 5 points each = 20 points;
- Three Special Quizzes, two Surveys @ 5 points each (Safety Quiz due before first lab; Practice Quiz, Survey 1, and Academic Honesty Quiz all due Monday, Jan. 28, 11:55 PM; End-of-Semester Survey due Friday, May 10, 11:55 PM.) = 25 points;
- Four Chem 104 Wiki Mandatory Contributions @ 5 points each* (Each contribution is due at noon the day before an exam except the last, which is due at 12:00 noon Friday, May 10.) = 20 points;
- TA Personal Evaluation @ 35 points = 35 points;
- Three 50-min. exams @ 90 points each (dates are listed in the Course Assignment Schedule) = 270 points;
- Final Exam (Tuesday, May 14, 5:05-7:05 PM, room to be announced) = 200 points.

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.

*Up to 15 points of extra credit is available if you edit wiki contributions (other than your own) after each exam. The 15 points extra credit will be recorded in a separate column in Moodle. Whether you choose to do extra-credit work or not has no effect on the point totals for letter grades.