Chemistry 104—Summer 2011

KEEP THIS SYLLABUS FOR FUTURE REFERENCE

General Chemistry:	5 credit hours
Lecture:	8:55 – 10:10 a.m., MWF
Location:	1351 Chemistry
Lecturer:	Dr. Jeannine R. Szczech
Office and Phone Number:	Chemistry 4227, (608) 890-0794
E-mail:	szczech@chem.wisc.edu (Use subject line: CHEM 104)
Office Hours:	Mondays and Wednesdays 11:35 am – 12:50 pm and Thursdays 12:00 pm – 1:15 pm
Learn@UW:	*http://learnuw.wisc.edu/*

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

The prerequisite for Chemistry 104 is Chemistry 103, and it is assumed that you took this course last semester. If your situation is different, 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.

Lab Manual: *Chemistry 104 Laboratory Manual*, Spring 2011, Department of Chemistry, UW-Madison, sold (for cash only, $15) in Chemistry Building starting the first day of class.

Lab Notebook: 100 page carbonless lab notebook available at local bookstores and in the Chemistry Building. You may use the remaining pages in your Chemistry 103 lab notebook if you desire.

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 at local bookstores. Contact lenses should not be worn in the laboratory because fumes or splashes may be caught between them and your eye. Safety rules are posted on your laboratory door.

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. ***Programmable (graphing) calculators will not be allowed on quizzes or exams.***

USB Drive: You should bring a USB drive with you to the laboratory so you can save your experimental data.

UW Copy Card: Printing lab reports, graphs, data, etc. in the Chemistry Library or the computer room requires a copy card. Copy cards can be purchased in any campus library, including the Chemistry Library (Room 2361).

LEARN@UW

The Chemistry 104 Learn@UW web site contains a course schedule with assigned homework, lecture notes, supplementary reading, on-line quizzes and other material. YOU ARE RESPONSIBLE checking the site

frequently throughout the semester, accessing the materials you need, and printing out anything you need in hard-copy form.

Practice Quiz: Much of the material for this course is ONLY AVAILABLE via Learn@UW. For this reason, it is imperative that you have access to a computer (yours, a friend's, or one in a computer lab) that is correctly set up to interface with Learn@UW. Login to Learn@UW from the computer you intend to use to access the site and take the Practice Quiz. The questions are not intended to test your knowledge of any subject, only to verify that the computer you are using is set up correctly. If you have trouble getting your own computer to do the Practice Quiz, use a computer in the chemistry building's computer lab (Room 1375). The Practice Quiz will be available to you throughout the semester, should you change computers and need to ensure all the functions work.

LECTURE AND DISCUSSION

Lecture. Lectures organize the material, outline goals, cover the basic principles of each topic and present illustrations and demonstrations. The lecture is not intended to describe or explain everything you will learn in the course; rather, it will indicate important topics to study and will give you an opportunity to think about these topics and see if you understand them. You should take notes during lecture that reflect your understanding of what you heard and saw. My lecture notes will be posted online at the course homepage after each lecture.

Lecture Etiquette. Given the size of our lecture, it's important that we all follow some basic etiquette rules. Do not engage in other activities (such as texting, talking, surfing the web, watching videos on your computer, reading the newspaper, etc.) during lecture or discussion, as these activities are disruptive and distracting to those around you. **The use of laptops, cell phones, and other electronic devices is strictly prohibited in the lecture hall.** If you need to make a phone call, check your email, etc., please exit the lecture hall quietly to do so. If you bring a cell phone to class or lab, turn it off for the duration of the class or lab period. If your phone rings during lecture, discussion, or lab, you may be asked to leave. Students who demonstrate a disregard for other students' right to learn during lecture will be asked to leave, and Dr. Szczech may request a meeting to discuss poor lecture behavior. **Lecture ends at 10:10 a.m.;** do not pack up early, as it creates a lot of noise and can prevent your classmates from hearing the lecture.

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.

Discussion Section. A group of about 24 students constitutes a discussion and laboratory section supervised by a teaching assistant. Discussion sections are for discussion, review, problem solving relevant to recent lectures, and preparation and review of laboratory experiments. **Be prepared** when you come to the discussion class. You should work out the homework problems for a given week, and you should expect to be called upon by your TA to discuss solutions to these problems. Do not expect your TA to lecture, but rather to lead discussion and encourage interaction among all students present. At the end of the semester, your TA will assign up to 15 participation points, which will consider both your attendance and quality of participation during discussion and laboratory.

Quizzes. Quizzes will be given online at the Learn@UW website. They will cover the material presented in lecture since the previous quiz. There are a total of eleven quizzes, of which the ten highest scores will count towards your course grade. See the course schedule at the end of the syllabus for the quiz schedule. Quizzes must be completed by 11:59 p.m. on the day they are due, and they will be available on Learn@UW at least 48 hour before the due time. You may take each quiz up to two times, and the average of your two scores will be the score recorded. All quiz questions are chosen at random—if you choose to take a quiz the second time, it is likely that you will not be given the same questions. YOU MUST WORK ALONE ON QUIZZES, and you may not ask for help from your friends or your TA. You may use your notes and textbook if you wish. The quizzes have a 60 minute time limit, so you must be fully prepared and confident with the material before beginning the quiz. You

are responsible for double-checking that you have entered the correct answers before submitting your quiz—grades will not be changed if you accidentally submit an incorrect answer. If you forget to take a quiz, a score of zero will be recorded for that quiz.

Homework Problems. The only way to master the material in this course is by working as many problems as possible. There are eleven homework assignments during the semester, of which the highest ten scores will count towards your grade. Homework assignments are due at the BEGINNING of discussion on those days during which discussion is held. Homework assignments that are due on an exam days should be brought to the lecture hall—these will be due at the BEGINNING of the exam period. You are responsible for keeping track of homework due dates and submitting these on time. The late penalty schedule is detailed in the "Late Assignment Policy" document in the "Course Information and Policies" section of Learn@UW. See the course schedule at the end of the syllabus for the homework assignments and due times. Additional practice problems are recommended (posted online under the Content tab on Learn@UW), but will not be collected for grading.

Participation Points. History shows that attendance and participation is highly correlated with material comprehension and good grades. For this reason, up to 15 participation points will be assigned by your TA at the end of the semester. Thus, it behooves you to attend and actively participate in discussion and lab session, and to seek help from your TA and Dr. Szczech when you have questions. See the "Participation Points Evaluation Criteria" document in the "Course Information and Policies" section of Learn@UW for more information.

Exams. There will be three exams given during the lecture period, and a two hour 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 it will be weighted more heavily toward material covered in the final segment of the course. You may bring a 4" × 6" note card containing any information to each regular exam, and 4 note cards (the original 3 plus 1 more) to the final exam.
The exam schedule is:

Exam 1	Friday, June 24	8:55 – 10:10 a.m.
Exam 2	Friday, July 8	8:55 – 10:10 a.m.
Exam 3	Friday, July 22	8:55 – 10:10 a.m.
Final Exam	Friday, August 5	8:55 – 10:55 a.m.

LABORATORY

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

- Designing experiments
- Learning proper laboratory techniques
- Using laboratory equipment properly
- Developing methods for interpreting and analyzing data
- Communicating your ideas about an experiment, through discussion and writing

Safety Quiz. The safety quiz on Learn@UW must be completed no later than Friday, June 17th at 5:00 p.m. There is no limit on how many quiz attempts a student may make, and a score of 5/5 is required to pass the quiz. Any student who does not pass the safety quiz by June 17th at 5:00 p.m. ***will not be permitted to participate in any of the laboratory exercises*.**

Academic Honesty Assignment. This assignment is found in the Quiz section on Learn@UW. It must be completely by the *beginning* of the lab period on Thursday, June 16th. In addition to the online component, you must also read the pages xxiii-xxiv in the lab manual, sign the tan form, and submit this to your TA. ***You will not be permitted to participate in any of the laboratory exercises until both portions of this assignment have been completed.***

Laboratory Assignments. There are ten in-lab assignments. The lab schedule can be found below and on pages 7 – 8 in this syllabus. Instructions for these labs and a description of the grading rubric are described in the lab manual.

Before the Laboratory Period. In the lab manual, read the section entitled "Preparing Yourself for this Experiment" and carry out the directions given. Notice that this section directs you to additional sources of information ("In the Textbook", "On the Web" and "In the Manual") that should be read.

Lab Notebook Preparation. In addition to reading the experiment and understanding the material, you must prepare your laboratory notebook before coming to the laboratory. Notebook preparation includes writing a purpose statement, procedure, relevant equations, all data tables required for the experiment, and marking areas to take experimental observations during the lab. An example of a prepared notebook is provided in the lab manual on pages xxxvii – xxxviii. You notebook **MUST BE PREPARED** when you arrive to lab. 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.

LABORATORY ASSIGNMENTS

Lab Assignment	Date	Lab Chapter
Check-In and LabQuest Introduction	June 14	Handout
Molecular Structures	June 16	1
Preparation of Aspirin and Some Flavoring Esters*	June 21	2
No Lab	June 23	—
Neutron Activation of Silver	June 28	7
Kinetics of Crystal Violet	June 20	4
Copper Ammine Compounds	July 5	9
No Lab	July 7	—
Chemical Equilibrium and Le Châtelier's Principle*	July 12	5
No Lab	July 14	—
Acid and Base Solutions	July 19	6
No Lab	July 21	—
Redox Titration	July 26	8
Chemical Equilibrium and Thermodynamics	July 28	10
Electrochemical Cells and Check-Out	August 2	11
No Lab	August 4	—

* Lab report will be a full, type-written lab report.

Safety in the Laboratory. Read the 'For Your Safety' section in the lab manual before you come to lab. It describes safety information specific to that experiment. SAFETY GOGGLES, LONG PANTS, AND STURDY SHOES ARE REQUIRED FOR EVERY EXPERIMENT. No contact lenses! No sandals! No moccasins! Failure to wear safety goggles in the laboratory is grounds for dismissal from lab, with no provision to make up the work you miss. If you arrive to laboratory in inappropriate attire, you will be sent home to change.

Attendance and Punctuality. 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 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. ***You must earn at least 60% of the possible lab points AND complete a minimum of 8 labs to pass this course.*** 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/all of their discussion, you ***may not be allowed to enter the laboratory to perform the experiment***.

Reports. Most lab reports are due at the end of the lab session; your TA will specify when lab reports are due. A late penalty will be assessed against late lab reports; the late penalty schedule is detailed in the "Late Assignment Policy" document in the "Course Information and Policies" section of Learn@UW. 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.

Mailboxes. All TAs have a mailbox in the Shain Tower. Any assignments submitted to your TA via the mailboxes must be accompanied by an email notifying them. The student is responsible for ensuring that the TA has been notified—any assignment submitted to a TA mailbox without email notification *may not be accepted for credit*.

RESOURCES

Electronic Mail (e-mail). I am a resource! Contact me via e-mail if you have questions or comments about the course, concerns about your performance, or the work you are doing. I will try to respond to all messages, either directly via e-mail or, when appropriate, in the next lecture. I usually answer messages within 24 hours. My email address is: szczech@chem.wisc.edu **Include "Chem 104" in your subject line to guarantee that your email will be read/replied to.**

Chemistry 104 Homepage. Resource material for this lecture section is available at Learn@UW. The homepage for my lecture section includes: course syllabus, overheads used for each lecture, quizzes, and copies of handouts.

Using Learn@UW: We will use Learn@UW for posting lecture documents, to take quizzes, and to keep track of your grades. Consult the website for instructions and tips to help you use Learn@UW at uwmad.courses.wisconsin.edu/.

General Chemistry Website (http://genchem.chem.wisc.edu/). Resource materials for general chemistry students are available on the General Chemistry website.

Study Groups. You are strongly encouraged to collaborate with other students on homework assignments and laboratory discussion questions. For many students, study groups are very helpful. **Unless informed to the contrary, you must turn in your own write-up using your own words (not a copy of the study group's work) for all these assignments.**

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 experiencing anxiety, depression, or other health issues, individual counseling is available at University Counseling and Consultation Services, For more information or to schedule an appointment, 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 can provide assistance (http://www.mcburney.wisc.edu/). Students needing special accommodations for this class should schedule a confidential meeting with Dr. Szczech during the first week of class to discuss arrangements.

GRADES

Your grade will be based on a maximum of 1020 points divided as follows:

Midterm exams (3 @ 125 pts.):	375 points
Quizzes (best 10 of 11 quizzes × 15 pts):	150 points
Homework (best 10 of 11 HWs × 5 pts):	50 points
Miscellaneous Quizzes and Prep Exercises:	30 points
Participation Points:	15 points
Laboratory:	200 points
Final exam:	200 points

Letter grades will be assigned at the end of the semester, based upon the following scale:

A	90.0 – 100%
AB	88.0 – 89.9%
B	80.0 – 87.9%
BC	78.0 – 79.9%
C	70.0 – 77.9%
D	60.0 – 69.9%
F	< 60.0%

If you earn 918 points (90%), you are guaranteed an A; likewise for the other point totals. I reserve the right to lower the cut-offs, but the cut-offs will not be raised higher. The final grading scale will not be released. There is no extra credit in this course, and assignments cannot be re-submitted to improve your grade.

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 a score of zero on the exam and may be given a failing grade for the course. The minimum penalty for any student caught cheating on a homework assignment, a quiz, or a lab (for instance, plagiarism, copying another person's work or fabricating data) will be a score of zero for that assignment; serious first infractions or a second infraction will result in an F for the course grade. 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. Szczech. NOTE: 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.

Review Your Grades. All grades will be entered electronically in Learn@UW so you can check our records for accuracy. To maintain confidentially, you will be required to enter your ID number. ***You are responsible*** for verifying your grades in a timely manner. Any discrepancies should be brought to your TAs attention via e-mail only—verification of the correct score may be required. You should retain graded assignments until your final grade has been issued. **Any discrepancies must be brought to your TA's attention before the final exam; after final grades have been released to the registrar, no additional changes will be made to the grades.**

SUMMER COURSES

Given the condensed schedule for a summer course, it is important to have a good study strategy and schedule study time into your schedule. You will need to devote considerable out-of-class time to studying chemistry. A good rule of thumb is to spend two hours outside of class for every hour you are in class. This amounts to 20 – 22 hours per week. A recommended study strategy is: 1) Read the assigned material in the text prior to lecture, 2) Attend lecture and discussion, and take your own notes, 3) Review your notes after class and work through homework problems, and 4) Get help as soon as possible when you don't understand a concept or have questions. When you encounter problems that you cannot solve, you might refer to the text, your notes, attend office hours, or work with your classmates. Working in study groups is a highly effective way to learn, and benefits everyone involved.

Week	Date	Lecture Topic	Reading	Assigned Problems	Quiz	Laboratory
1	13-Jun	Bonding Review, Organic (Hydrocarbons)	8, 9, 10.1	**HW 1** Ch. 8: 8, 30, 35, 46, 70, 78; Ch. 9: 5, 11, 31, 35, 53, 54 (due W 06/15)	**Quiz 1** Ch. 8 & 9 (due W 06/15) **Quiz 2** Ch. 10 (due F 06/17)	Check in, LabQuest Introduction (T), Molecular Structures (R)
	15-Jun	Organic (Hydrocarbons, Aromatics)	10.1 - 10.2			
	17-Jun	Organic (Oxygen)	10.3 - 10.4			
2	20-Jun	Organic (Oxygen and Nitrogen)	10.3 - 10.4	**HW 2** Ch. 10: 3, 4, 7, 9, 15, 19, 23, 31, 35, 41, 43, 45, 52, 53 (due M 06/20); **HW 3** Ch. 10: 34, 37, 61, 62, 69, 79, 91 and pps. 512 - 513: 1, 3, 5 (due F 06/24)	**Quiz 3** Ch. 10 (due W 06/22)	Preparation of Aspirin and Some Flavoring Esters* (T), No Lab (R)
	22-Jun	Organic (Polymers and Biomolecules)	10.5, pps 497 - 512			
	24-Jun	**Exam 1**				
3	27-Jun	Kinetics	15.1 - 15.3	**HW 4** Ch. 15: 3, 4, 6, 9, 11, 13, 15, 19, 33, 35 (due F 07/01)	**Quiz 4** Ch. 15 (due W 06/29) **Quiz 5** Ch. 15 (due F 07/01)	Neutron Activation (T), Kinetics of Crystal Violet (R)
	29-Jun	Kinetics	15.4 - 15.5			
	1-Jul	Kinetics, Equilibrium	15.6, 16.1 - 16.2			
4	4-Jul	No Lecture		**HW 5** Ch. 15: 39, 42, 43, 47; Ch. 16: 1, 5, 9, 11 (due F 07/08)	No Quiz	Copper Ammine Compounds (T), No Lab (R)
	6-Jul	Equilibrium	16.3 - 16.4			
	8-Jul	**Exam 2**				

5	11-Jul	Equilibrium	16.5 - 16.6	**HW 6** Ch. 16: 15, 17, 23, 25, 27, 33, 35, 39, 44 (due W 07/13)	**Quiz 6** Ch. 16 (due W 07/13) **Quiz 7** Ch. 17 (due F 07/15)	Le Chatelier's Principle* (T), No Lab (R)
	13-Jul	Acids & Bases	17.1 - 17.4			
	15-Jul	Acids & Bases	17.5 - 17.10			
6	18-Jul	Buffers	18.1 - 18.2	**HW 7** Ch. 17: 3, 7, 10, 11, 15, 23, 27, 29, 35, 41, 49, 57, 61, 67, 87, 91 (due M 07/18); **HW 8** Ch. 18: 1, 5, 9, 13, 15, 19, 21, 25, 29, 31 (due F 07/22)	**Quiz 8** Ch. 18 (due W 07/20)	Acid & Base Solutions (T), No Lab (R)
	20-Jul	Titrations, Solubility	18.3 - 18.4			
	22-Jul	**Exam 3**				
7	25-Jul	Solubility, Thermodynamics	18.5, 19.1 - 19.2	**HW 9** Ch. 18: 35, 37, 41, 45, 53, 55, 59, 61, 71, 73, 76 (due W 07/27)	**Quiz 9** Ch. 18 (due M 07/25) **Quiz 10** Ch. 19 (due F 07/29)	Redox Titrations (T) Thermodynamics (R)
	27-Jul	Thermodynamics	19.3 - 19.4			
	29-Jul	Thermodynamics	19.5 - 19.7			
8	1-Aug	Electrochemistry	20.1 - 20.2, 20.4	**HW 10** Ch. 19: 2, 5, 7, 13, 15, 19, 23, 25, 27, 52, 67 (due M 08/01) **HW 11** Ch. 20: 3, 5, 13, 17, 19, 23, 27, 29, 31, 39, 43, 45, 51, 55, 63 (due F 08/05)	**Quiz 11** Ch. 20 (due W 08/03)	Electrochemical Cells and Check-out (T), No Lab (R)
	3-Aug	Electrochemistry	20.5 - 20.8			
	5-Aug	**Final Exam**				