

DEPARTMENT OF CHEMISTRY, UNIVERSITY OF WASHINGTON
WINTER QUARTER 2009
CHEMISTRY 152 – GENERAL CHEMISTRY – II
SECTION B – COURSE SYLLABUS, POLICIES AND PROCEDURES
Lectures: M, W, and F 3:30 p.m. to 4:20 p.m., Room 130, Kane Hall

Instructor: Dr. Khushroo P. Daruwala Office: Room 12, Chemistry Library (CHL) Building
E-mail: daruwala@u.washington.edu **Office Telephone:** (206) 543-7957
Office hours: Mondays and Wednesdays, 1:30 to 2:45 p.m. or by appointment

Lab Instructor: Dr. Andrea Carroll **Office:** Chemistry Building (CHB) 204 K
E-mail: ageddes@u.washington.edu **Office Telephone:** (206) 616-5319
Office hours: Mondays 10:00 a.m. to 12:00 noon.

Lead TA: Mr. Ryan Wilson **Office:** Chemistry Library (CHL) Building
E-mail: rbwilson@u.washington.edu **Office Telephone:** (206) 616-2918

Prerequisites: Completed *Chemistry 142* or an equivalent first quarter General Chemistry course with a grade ≥ 1.7 .

Add/Drop Information: Conducted in Room 271 (stockroom), Bagley Hall.

COURSE MATERIALS

Except where indicated, all the following items are available from the University Bookstore.

- Chemical Principles* by Steven S. Zumdahl, Sixth Edition (2009), Houghton Mifflin (required).
- Study Guide to Chemical Principles* by Paul B. Kelter, Sixth Edition (optional).
- Chemistry 152 – General Chemistry – II Laboratory Manual*, (required).
- WebAssign access card, which can also be purchased online at <http://www.webassign.net> (required).
- Laboratory notebook with numbered pages and carbonless duplicate sheets, non-programmable scientific calculator, goggles, a six or twelve-inch ruler, and lab coat, (all required). Lab coats are available for purchase from the University Book Store on University Avenue.

COURSE DESCRIPTION

The course consists of: 3 lectures per week

- 1 quiz or recitation period per week
- 1 three-hour laboratory session per week (a total of six experiments in the course).

Attendance at ALL course components is essential to obtain a satisfactory grade in this course. Your grade will be based upon your performance on all homework assignments, laboratory experiments, quizzes, and exams.

COURSE OBJECTIVES

The central themes of the lectures are covered in chapters 9 – 13 of the textbook:

- ◆ thermochemistry and thermodynamics (Chapters 9 and 10)
- ◆ electrochemistry (Chapter 11)
- ◆ quantum theory and atomic structure (Chapter 12)
- ◆ chemical bonding (Chapter 13)

In the lab portion of the course (one fifth of the course) the conducted laboratory exercises will:

- ◆ Emphasize and apply the concepts learnt during the lecture periods.
- ◆ Develop practical laboratory, data analysis, and scientific writing skills.

<u>COURSE GRADING:</u>	Laboratory	150 (21 %)
	Homework (5 homework problem sets)	80 (11 %)
	Quizzes (8 quizzes at 10 pts. each – lowest quiz score dropped)	70 (10 %)
	Two midterm exams (each one of 100 points and lasting 50 minutes)	200 (29 %)
	Final exam (1 hour and 50 minutes on Thursday, March 19, 2009)	200 (29 %)
	TOTAL	700

Grade Distribution: The undergraduate program committee policy states that the final mean GPA in *Chemistry 152* should fall within the range 2.6 +/- 0.2. It is the Chemistry Department's policy not to make grade changes of 0.1 after final class grades are submitted to Records.

Late Policy: Late submission of lab assignments (either pre-lab or post-lab write-ups) and homework exercises will **not** be accepted.

LABORATORY WORK: The URL for the laboratory portion of the course, where information about report sheets, lab templates, and lab lecture notes could be readily obtained, is <http://depts.washington.edu/chem/courses/labs/152labs/index.html>.

The lab consists of a pre-lab exercise, the actual lab work and a post-lab report. The lab schedule has also been presented in this syllabus.

Attendance: You must attend every laboratory session – no make-up lab is offered. If you miss more than one lab, you will fail the class. The same policies described about missing an exam apply here. If an absence is unavoidable, please contact your TA (if possible in advance of the lab period) and the stockroom (Bagley 271). See the laboratory manual for more details and see Dr. Tracy Harvey (Bag 294) if you need to be excused.

Safety: There is an element of hazard in any laboratory course. You are required to follow the safety rules as outlined in your laboratory manual. In particular you are required to wear **approved safety goggles and a lab coat** throughout the duration of the lab period. If you do not dress appropriately, you will not be allowed to perform the experiment and will receive a grade of 0.0 for that experiment/report. **No open-toed shoes, no shorts, no bare legs are allowed during the laboratory periods.**

Pre-labs: You will use internet-based pre-labs. You will receive as well as submit your assignments online via the Internet. For more details, see the WebAssign description under homework.

Check the due dates for the pre-labs to avoid being shut out. You must score at least 3.5 points (out of a total of 5 points) on the WebAssign pre-lab **before the deadline, which will be 2:30 p.m. on the Monday of the week during which the experiment has been scheduled.** If you don't have the required 3.5 point score by the due date, you will have 15 points deducted from your grade for the lab report. The purpose and procedure sections of your notebook must be completed before your lab period.

Lab Notebook: Bound laboratory notebook with numbered pages and carbonless duplicate sheets are available at the bookstore. Please note the special nature of this lab notebook, since loose leaf and spiral bound notebooks will not be allowed as laboratory notebooks.

- All data must be recorded IN INK in the notebook. Line through your errors neatly instead of erasing or whitening them out.
- On the first page of your notebook write (i) your name and student number, (ii) Winter Quarter 2009, (iii) the course number, viz. *Chem 152B*.
- Commence writing the experiments from page 2 onwards.
- Write only on the right-hand page of the notebook the purpose and procedure sections along with the data that is acquired in lab.
- **Hand in the carbons at the end of each lab period.**

During Labs: Perform only the assigned work. If any deviations are necessary, consult your TA first. Record observations (data), perform all necessary calculations, and based upon your results, arrive at some conclusion.

Before You Leave the Lab: Your TA will check and make sure that you have done all the assigned work. He/she will initial your lab notebook and ask for a duplicate copy of your work.

Post-Lab Reports

Unless instructed otherwise, all post-lab reports are due at the beginning of the next laboratory period.

- Exp. #1: Safety Exercise and Weak Acid Titration and Buffer Capacity. (5 pts pre-lab + 60 pts notebook and Excel template).
- Exp. #2: Calibration Curves and Application of Beer's Law. (5 pts pre-lab + 60 pts notebook and Excel template).
- Exp. #3: Thermodynamics – I. (5 pts pre-lab + 60 pts notebook and Excel template).
- Exp. #4: Thermodynamics – II. (5 pts pre-lab + 60 pts notebook and Excel template).
- Exp. #5: Electrochemistry. (5 pts pre-lab + 60 pts notebook and Excel template).
- Exp. #6: Atomic Emission Spectroscopy. (5 pts pre-lab + 60 pts notebook and Excel template). **Report for this experiment is due at the beginning of the quiz or recitation period during the following week.**
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ACADEMIC ETHICS

Original work performed in good faith is assumed on all laboratories/exams/worksheets. It is presumed that the data you record and report in the laboratory is your own work. University rules define scientific and scholarly misconduct to include the following forms of inappropriate activities:

- Intentional misrepresentation of credentials
- Falsification of data
- Plagiarism

Failure to adhere to this code of ethics will result in prosecution to the fullest extent (see

<http://www.washington.edu/students/handbook/conduct.html> for specifics). In short, if you have not done something yourself, do not attempt to pass it off as original work.

LECTURES

An approximate schedule that shows the chapters to be covered during each week is presented on the last page of this course syllabus. You are expected to read the material to be covered *prior* to the lecture. You are responsible for material covered in class AND in the text. Attendance at all lectures is expected.

Out of respect for your classmates, please observe the following rules:

- Arrive on time, and be ready and seated for the lecture to begin. If an emergency causes you to arrive late, please enter quietly through the rear doors, which are reached from the second floor corridor.
- Do not begin to pack up your books etc. before the end of lecture.
- Do not have conversations with your neighbor during lecture.
- Turn off your cell phone or pager.

HOMEWORK: This course uses internet-based homework exclusively. You will receive as well as submit your assignments online via the Internet. The Internet interface is called “WebAssign”.

How to access WebAssign 1. Your computer must be connected via Internet Explorer or Netscape Navigator or Mozilla Firefox. It does NOT work with the standard AOL browser.

1. Go to www.webassign.net/washington/login.html.
2. Click on the button labeled “Log In” which takes you to the UW NetID weblogin.

UW NetID:

<input type="text"/>	←	Your UW Net ID (e-mail address without the "@u.washington.edu")
Password: <input type="text"/>	←	Your UW Net ID password

3. Click on the “Log In” button, which takes you back to WebAssign.

NOTES: 1) Each student must purchase an access code to use WebAssign.

- 2) Access codes can be purchased either in person at the UW bookstore, or online at WebAssign’s website. Enter the code in the assignment titled “WebAssign Registration.” There is a two-week grace period before the access codes are enforced.
- 3) Click on the “Student Guide” for information about how to use WebAssign. Also, the “Intro to WebAssign” assignment will help you learn how to use WebAssign.
- 4) If you need additional help, see your TA or go to the Chem Study Center (BAG 330).

How WebAssign works

1. The internet-based homework is designed to give individual assignments. The numbers for most of the assigned problems will change each time you log on to the assignment.
2. You may submit your homework at any time within that time frame.
3. Assignment grading is automatic and details of your score are reported instantly. **You will have the ability to re-work and re-submit problems until the due date of the assignment. (Note that there will be a maximum limit of five submissions).**
4. The last submission will be the score recorded for the homework.

Additional instructions are available on the Chemistry Department Web page at <http://depts.washington.edu/chemcrs/index.html>. If you have difficulty logging on, go to the chemistry study center (Bagley 330) for help.

WebAssign Due Dates for Homeworks: Five (5) homework exercises will be administered during the term. The number of questions and the points assigned will vary with each homework exercise. You will be notified about the due date of each homework assignment in class as well as on-line. The frequency of homework submission will roughly be about one per ten days, depending upon the coverage of the material in the lectures. Sufficient time will be provided to complete and submit the homework. It is the student’s responsibility to make sure that their WebAssign homework is submitted by the due date and time. Late homework assignments will not be accepted.

QUIZ SECTION: Be on time! Part of the quiz period is devoted to a quiz of the pertinent lecture topics and reading materials. Do not be late in arriving at the quiz section period since you may miss the quiz, which then cannot be made up. Part of the quiz period is devoted to problem solving and helping you with difficulties towards understanding the lecture and lab materials. **Eight quizzes commencing from the second week and continuing every week through week 9 will be administered during the course of the term. The lowest quiz score will be dropped in computing your grade. If you are absent from a quiz, it will be the one that shall be dropped. All quizzes have to be taken during the scheduled quiz period. There are no make-up quizzes and no alternative times for taking any quizzes.**

Teaching Assistant: The TA is an important person to your success. Address all teaching assistants with respect.

You will have the same TA for the lab and lecture components of the course. Be sure to use the resources offered by the teaching assistants. They can identify your weaknesses and help correct them. They can also clarify any questions you might have about the text. e.g. What do these words mean? Or did I miss something? Etc.

Chemistry Study Center: <http://depts.washington.edu/chemugs/studycenter.html>.

Located in Room 330, Bagley Hall, the Chemistry Study Center will provide you with all the help you might need for solving homework problems, answering questions, and providing study guides and tips. The center is open from Mondays to Thursdays from 9.00 a.m. to 6.00 p.m. and on Fridays from 9.00 a.m. to 2.00 p.m. This is the best resource for your learning and acquiring mastery of the course contents and materials. Please make good use of this resource.

EXAMS

The dates for the First and Second Exams are respectively **Friday, January 30, and Friday, February 27, 2009.**

There are no make up exams and no alternative times for taking any exam. Chemistry knowledge is cumulative so questions on exams will often depend upon your knowledge from earlier chapters. All exams may be completely multiple-choice.

A) Exam Rules

1. **Bring a No. 2 pencil, your calculator, and a photo ID to all exams. Answers on the exams should be written using No. 2 pencil.**
2. Seating charts showing the assigned seating arrangement will be provided for each exam. Please sit on the assigned seat only.

B) Grading of Exams: Midterm exams will be graded and returned during quiz section period.

- Keys to exams will be posted on the *Chem 152* bulletin board in Bagley Hall. Answer Keys to exams will not be posted on-line.

C) Re-Grading of Exams: To have your exam re-graded, it must be given to your TA within 48 hours of its return to you along with a note explaining what you want reconsidered and why.

- We reserve the right to re-grade the entire exam, so you may lose rather than gain points.

D) Absence from Exams: If you are absent from a midterm exam due to an emergency, the weight of your final exam will be increased proportionately in calculating the course grade. Examples of an emergency include illness, death or serious illness in the family.

For an emergency:

- 1 Report your absence from an hourly examination within 72 hours to Dr. Tracy Harvey in Bagley 294; and,
- 2 Bring proof of your unavoidable cause (a doctor's note, an accident report, a memorial folder, or similar documentation). The documentation must include a contact name and telephone number.
- 3 Dr. Harvey will then notify the instructor of the status of your absence. If your absence does not meet the above criteria, you will be given a zero for the exam.

Other kinds of absences, such as observance of regularly scheduled religious obligations or military duty, may be excused; provided that previous notification and documentation has been submitted to Dr Harvey.

Absence due to participation in university-sponsored activities such as debating contests or athletic competition also require prior approval. Please bring your letter from the sponsoring group to Dr Harvey. If you are excused, then the score on your final exam may be increased proportionately.

E) Final Exam – Thursday, March 19, 2009, 2:30 – 4:20 p.m.

The final exam will be cumulative and will cover the entire course material. It will be completely multiple-choice.

Note: If you are absent from the final examination, and you are ineligible for an incomplete according to the UW regulations, a course grade of 0.0 will be given. On the other hand if it has been determined that an incomplete grade be given, then it will be the student's responsibility to make sure that the incomplete grade is removed by taking the final exam for the same course during the next regular academic quarter in which it is offered.

For all exams:

You will need to bring with you and display your identification card with photograph at the time of taking all exams. Please note that a subset of all written exams will be photocopied to guard against academic fraud. By taking an exam you agree that your exam will be used as evidence should cheating or fraud become an issue?

COURSE WEBSITE:

Please check the course website continuously for course information or for downloading any handouts. Instructions to navigate to the web page of *Chemistry 152 B* for Winter Quarter 2009 are as follows:

- 1) Click on the Internet search engine icons (either Internet Explorer or Netscape or Mozilla Firefox) on your desktop, and go to the chemistry department web page at <http://depts.washington.edu/chem/>.
- 2) At the department web page, click on "Courses."
- 3) You will observe the "**Winter 2009 Course Index**" right in front of you.
- 4) Select and click on "**Chem 152 B – Discussion Board**".
- 5) You will be asked to login with your UW NetId. Only those students registered in this class will be able to access this site.
- 6) Once you login you may be able to select the category you want to access from the top left corner of the course webpage.

GoPost:

GoPost is a web tool that creates a threaded online discussion board about topics related to the lecture and lab portions of the *Chem 152 B* class. It will provide you with a forum to exchange ideas and provide solutions to questions posed on class-related topics, outside of class, any time, and from any Internet-connected computer. You can also access the course webpage once you login into GoPost.

Useful Web resources for the course: = <http://faculty.washington.edu/dwoodman/unitsHome.html>
<http://depts.washington.edu/woodmand/webExHome.html>

Professor Darrell J. Woodman of the Department of Chemistry has developed the above websites for students in general and organic chemistry courses. This is an excellent website for interactive exercises on atomic structure and orbitals, nuclear size, covalent and ionic bonding, molecular orbitals, Lewis structures and molecular geometry / shape, hybridization, intermolecular forces and physical properties, the topics of organic compounds and organic reactions, as well as the concepts of thermochemistry, thermodynamics, and kinetics. Making use of these websites by the students will be very helpful towards understanding, learning, and mastering the concepts that shall be taught in this course.

LAB EXPERIMENT SCHEDULE

WEEK	#	M	Tu	W	Th	F
1/5	1					
1/12	2	Pre-lab exercise due at 2:30 p.m.	Lab #1 Weak Acid Titration	Lab #1	Lab #1	Lab #1
1/19	3	Holiday				
1/26	4	Pre-lab exercise due at 2:30 p.m.	Lab #2 – Calibration Curves	Lab #2	Lab #2	Lab #2
2/2	5	Pre-lab exercise due at 2:30 p.m.	Lab #3 – Thermodynamics I	Lab #3	Lab #3	Lab #3
2/9	6	Pre-lab exercise due at 2:30 p.m.	Lab #4 – Thermodynamics II	Lab #4	Lab #4	Lab #4
2/16	7	Holiday				
2/23	8	Pre-lab exercise due at 2:30 p.m.	Lab #5 – Electrochemistry	Lab #5	Lab #5	Lab #5
3/2	9	Pre-lab exercise due at 2:30 p.m.	Lab #6 – Atomic Emission	Lab #6	Lab #6	Lab #6
3/9	10					
3/16	11		FINALS	FINALS	FINALS	FINALS

SCHEDULE OF LAB AND QUIZ SECTIONS

<u>Sections</u>	<u>Day</u>	<u>Time</u>	<u>Location</u>	<u>Teaching Assistant</u>
BA QZ	Tu	1:30 – 2:20	24L CMU 230	Mengxia Zhao
LB	Tu	8:30 – 11:20	BAG 236	
BB QZ	Tu	2:30 – 3:20	24L MGH 238	Yue Huang
LB	Tu	8:30 – 11:20	BAG 236	
BC QZ	Tu	3:30 – 4:20	24L CMU 243	Tammie Nelson
LB	Tu	8:30 – 11:20	BAG 236	
BD QZ	Tu	11:30 – 12:20	24L SWS B 012	Benjamin Kehimkar
LB	W	8:30 – 11:20	BAG 236	
BE QZ	Tu	1:30 – 2:20	24L SWS B 014	Michael Bardaro
LB	W	8:30 – 11:20	BAG 236	
BF QZ	Tu	2:30 – 3:20	24L DEN 307	Thomas Oates
LB	W	8:30 – 11:20	BAG 236	
BG QZ	Tu	8:30 – 9:20	24L MGH 248	Ariel Zane
LB	Th	8:30 – 11:20	BAG 236	
BH QZ	Tu	9:30 – 10:20	24L CDH 223 A	Ryan Wilson
LB	Th	8:30 – 11:20	BAG 236	
BI QZ	Tu	10:30 – 11:20	24L BNS 203	Alicia Cohn
LB	Th	8:30 – 11:20	BAG 236	
BJ QZ	Tu	3:30 – 4:20	24L CDH 223 A	Mengxia Zhao
LB	Th	3:30 – 6:20	BAG 236	
BK QZ	Tu	1:30 – 2:20	24L SWS 030	Ariel Zane
LB	Th	3:30 – 6:20	BAG 236	
BL QZ	Tu	2:30 – 3:20	24L DEN 306	Tammie Nelson
LB	Th	3:30 – 6:20	BAG 236	
BM QZ	Tu	11:30 – 12:20	24L FSH 109	Thomas Oates
LB	F	8:30 – 11:20	BAG 236	
BN QZ	Tu	12:30 – 1:20	24L CHL 101	Benjamin Kehimkar
LB	F	8:30 – 11:20	BAG 236	
BO QZ	Tu	10:30 – 11:20	24L FSH 109	Daniel Sluss
LB	F	8:30 – 11:20	BAG 236	
BP QZ	Tu	8:30 – 9:20	24L MGH 074	Margaret Scheuermann
LB	Th	6:30 – 9:20	BAG 236	
BQ QZ	Tu	11:30 – 12:20	24L EEB 042	Ryan Wilson
LB	Th	6:30 – 9:20	BAG 236	
BR QZ	Tu	12:30 – 1:20	24L CDH 223 A	Yue Huang
LB	Th	6:30 – 9:20	BAG 236	
BS QZ	Tu	12:30 – 1:20	24L MLR 302 A	Margaret Scheuermann
LB	W	6:30 – 9:20	BAG 236	
BT QZ	Tu	2:30 – 3:20	24L PAA A 212	Jonathan Cox
LB	W	6:30 – 9:20	BAG 236	
BU QZ	Tu	12:30 - 1:20	24L JHN 022	Guozheng Shao
LB	Th	11:30 – 2:20	BAG 233	
BV QZ	Tu	3:30 – 4:20	24L MGH 288	Alexandria Anderson
LB	Th	11:30 – 2:20	BAG 233	(Kappus)

Teaching Assistant Contact Information: Please note that Bagley 330 is the Chemistry Study Center (CSC).

Name	Office Hours – Days, Times, and Location	E-mail Address
Ryan Wilson (lead)	Tuesdays, 1:30 – 2:30 p.m.; Thursdays, 1:30 – 2:30 p.m. CHL 142	rbwilson@u.washington.edu
Alexandria Anderson (Kappus)	Fridays, 11:00 a.m. – 12:00 noon Bagley 330 (CSC)	alex63@u.washington.edu
Michael Bardaro	Mondays, 4:00 – 5:00 p.m. Bagley 330 (CSC)	mfbardar@u.washington.edu
Alicia Cohn	Wednesdays, 2:00 – 3:00 p.m. Bagley 330 (CSC)	awcohn@u.washington.edu
Jonathan Cox	Mondays, 1:00 – 2:00 p.m. Bagley 330 (CSC)	jtcox54@u.washington.edu
Yue Huang	Wednesdays, 1:30 – 3:30 p.m. Bagley 330 (CSC)	yuehuang@u.washington.edu
Benjamin Kehimkar	Mondays, 12:30 – 1:30 p.m.; Fridays, 12:30 – 1:30 p.m. CHL 018	kehimb@u.washington.edu
Tammie Nelson	Mondays, 1:30 – 2:30 p.m.; Tuesdays, 2:30 – 3:30 p.m. Bagley 330 (CSC)	tammien@u.washington.edu
Thomas Oates	Wednesdays, 12:30 – 1:30 p.m.; Fridays, 12:30 – 1:30 p.m. CHL 201 A	oatest@u.washington.edu
Margaret Scheuermann	Tuesdays, 10:00 – 11:00 a.m.; Tuesdays, 2:00 – 3:00 p.m. Bagley 330 (CSC)	mls36@u.washington.edu
Guozheng Shao	Mondays, 9:30 – 10:30 a.m. Bagley 019	gzshao@u.washington.edu
Daniel Sluss	Wednesdays, 10:00 – 11:00 a.m. Bagley 330 (CSC)	dsluss@u.washington.edu
Ariel Zane	Mondays, 9:30 – 10:30 a.m.; Wednesdays, 9:30 – 10:30 a.m. Bagley 330 (CSC)	azane@u.washington.edu
Mengxia Zhao	Mondays, 1:30 – 2:30 p.m.; Tuesdays, 4:30 – 5:30 p.m. Bagley 330 (CSC)	mxzhao@u.washington.edu

If you would like to request academic accommodations due to a disability, please contact Disabled Student Services, 448 Schmitz, 543-8924 (V/TDD). If you have a letter from Disabled Student Services indicating you have a disability that requires academic accommodations, please present the letter to me so we can discuss the accommodations you might need for this class.

Tentative Schedule

Date	Day	Lectures and Exams	
Jan. 5	M	Introduction to the course and Ch. 9 Energy, Enthalpy, and Thermochemistry	
7	W	Lecture on Laboratory and its policies	
9	F		
12	M		Week of Experiment 1
14	W		
16	F	Ch. 10 Spontaneity, Entropy, and Free Energy	
19	M	Dr. Martin Luther King, Jr. Day - no class	
21	W		
23	F		
26	M		Week of Experiment 2
28	W		
30	F	First Exam	
Feb. 2	M	Ch. 11 Electrochemistry	Week of Experiment 3
4	W		
6	F		
9	M		Week of Experiment 4
11	W		
13	F	Ch. 12 Quantum Mechanics and Atomic Theory	
16	M	President's Day - no class	
18	W		
20	F		
23	M		Week of Experiment 5
25	W		
27	F	Second Exam	
Mar. 2	M	Ch. 13 Bonding: General Concepts	Week of Experiment 6
4	W		
6	F		
9	M		
11	W		
13	F		
19	Th	Final Exam (2:30 p.m. to 4:20 p.m.)	
