

CHEMISTRY 142B, Autumn 2007

SYLLABUS, POLICIES AND PROCEDURES

LECTURES: M, W, Th, F, 9:30-10:20 AM, KNE 130

Web Address: <http://faculty.washington.edu/callis/Chem142/Au-02/>**Prerequisites:** Completed high school chemistry and placement into Math 120 or higher.**Add or Drop:** Go to Bagley 271 (Undergraduate Stockroom)**INSTRUCTORS**

Class: Professor James Callis Office: BAG 204A Telephone: 543-1208
 E-mail: callis@u.washington.edu
 Office hours: M, 11:30 AM - 12:20 PM, and W, 11:30 AM - 12:20 PM,
 204A Bagley Hall

Lab: Dr. Andrea Carroll Office: CHB 204K Telephone: 616-5319
 E-mail: ageddes@u.washington.edu
 Office hour: W 10:30-12:20

Teaching Assistants:

<u>Section</u>	<u>Name (email)</u>	<u>Section</u>	<u>Name (email)</u>
BA	Semiao (csemiao@u)	BB	Sharp (sharp275@u)
BC	Liang (winco@u)	BD	Johnson (crjohns@u)*
BE	Ng (marshan@u)	BF	Riedel (riedeltp@u)
BG	Burns (burnsaw@u)	BH	Aguirre de Carcer (inihaze@u)
BI	Sharp (sharp275@u)	BJ	Sellers (jsell002@u)
BK	Liang (winco@u)	BL	Riedel (riedeltp@u)
BM	Chung (atchung@u)	BN	Stone (sstone2@u)
BO	Stone (sstone2@u)	BP	Johnson (crjohns@u)*
BQ	Aguirre de Carcer (inihaze@u)	BR	Deer (cjd22@u)
BS	Sellers (jsell002@u)	BT	Burns (burnsaw@u)
BU	Ng (marshan@u)		

* Head TA

MATERIALS**Except where indicated, all are available from the University Bookstore**

- Zumdahl, *Chemical Principles*, Fifth Edition, Houghton Mifflin (required).
- Kelter, *Study Guide, Chemical Principles*, Fourth Edition (optional).
- *Chemistry 142 General Chemistry Laboratory Manual* (required).
- WebAssign access card. It can also be purchased online at <http://www.webassign.net>. (required)
- Scientific calculator (required); any SAT approved calculator is allowed.
- Laboratory approved goggles (required); snow, swimming, or workshop goggles are not approved.
- Lab coat. (required)
- Response card ('clicker').
- Callis, *Chemistry 142 Lecture Notes*. Available on line at the class web site or from the bookstore. Note: these lecture notes are incomplete by design. We will fill in the blanks together during lecture.

COURSE DESCRIPTION

The course consists of:

- 3 - 4 lectures a week
- 1 quiz section a week
- 1 three-hour laboratory session per week (6 total).

Attendance at ALL course components is essential to obtain a satisfactory grade in this course.

COURSE OBJECTIVES

The central focus of this course is to develop quantitative problem solving skills. You will:

- Learn to clearly pose a problem and solve it, giving detailed solutions for all aspects of that problem. These can include central and auxiliary equations with any needed conversion factors.
- Learn to report precision in input data and derive solutions to problems containing the appropriate number of significant figures.
- Use these skills to master the following fundamental chemistry topics:
 - ◆ Atomic nature of matter
 - ◆ Stoichiometry
 - ◆ Major Classes of Inorganic Chemical Reactions
 - ◆ Gases
 - ◆ Chemical Equilibrium
 - ◆ Acids and Bases
 - ◆ Applications of Aqueous Equilibria
- Conduct laboratory exercises that:
 - ◆ Emphasize and apply the concepts learned in lectures.
 - ◆ Develop laboratory, data analysis, and scientific writing skills.

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 laboratory is your work. University rules (Handbook, Vol. IV, Part 9, Chapter 1, Executive Order #61) 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.

<i>GRADING</i>	2 Midterm exams (1 hr. each, 100 pts. each)	30 %
	Quizzes (lowest quiz score dropped)	7 %
	Response card scores (50% participation, 50% correct ans.)	6%
	Homework (lowest HW score dropped)	7 %
	Laboratory	20 %
	<u>Final exam (2 hr.)</u>	<u>30 %</u>
	TOTAL	100 %

Grade Distribution – The undergraduate program committee policy states that the final mean GPA in Chemistry 142 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.

LECTURES

An approximate schedule that assigns textbook material to be covered each week is on page 7.

You are responsible for material covered in class AND in the textbook. Attendance at lectures is expected.

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

- Arrive on time. If an emergency causes you to arrive late, please enter quietly through the rear doors where available.
- 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.

RF RESPONSE CARDS - The response keypad will be an integral part of classroom learning. To facilitate this, there may be assigned seating in the class. Your lowest three scores will be dropped. If you have trouble with the response card, see the folks in Rm 292 Bagley. 50% of your grade on this part of the course will be based on participation, i.e. on your answering the questions. The other 50% will be based on giving the correct answers.

LABS

The lab consists of a pre-lab exercise, lab work and post-lab report. The lab schedule is given on page 7.

Attendance: *You must attend every laboratory session.* If you miss more than one lab without an excused absence, you will fail the class. The same policies described about missing an exam apply here. If you do miss lab, please contact your TA (if possible in advance of the lab) and the stockroom (Bagley 271). We will try to schedule you into an alternate lab time. See Dr. Harvey, Bagley 294, if you need to be excused (there is no alternate time, or you need to be assigned a make up lab). See the laboratory manual for more details.

Safety: There is an element of hazard in any laboratory course. You are required to follow the safety instructions as outlined in your laboratory manual. In particular, you are required to wear **approved safety goggles and a lab coat** during all the experiments. If you do not dress appropriately, you will not be allowed to attend the lab session. **No open-toed shoes, no bare legs or ankles will be permitted, nor will any clothing that interferes with lab activity.**

Pre-labs: This course uses internet-based pre-labs exclusively. You will both receive and 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 need to score $\geq 3.5/5$ (70%) on the prelabs to be considered prepared for lab. If you do not complete the prelab with a score $\geq 70\%$, you will lose an additional 5/35 (12.5%) of the lab report points. Also, the purpose and procedure sections of your notebook must be completed before your lab session.

Lab Notebook: Bound laboratory notebook with numbered pages (not loose leaf or spiral) **and carbonless duplicate copies** are available at the bookstore. *Please note the special nature of this lab notebook.*

- All recording and reporting must be in this notebook IN INK. Line through your errors neatly instead of erasing or whiting out.
- On the first page of your notebook write (i) your name and student number, (ii) Autumn Quarter 2007, (iii) the course number, Chem. 142 B, and (iv) your section.
- Start the experiments on page 2.
- Write only on the right-hand page of the notebook while in the laboratory and for the purpose and procedure sections.
- ***Be prepared to hand in the duplicates at the end of each lab period.***

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

Before You Leave the Lab:

Your TA will check and make sure that you have done all assigned work He/She will initial your lab notebook and ask for a duplicate copy of your work.

Post-Lab Reports

The report templates are available via the 142 Lab link on <http://depts.washington.edu/chem/courses/>

- Exp. #1: Safety Exercise
Physical Measurements and Error Analysis.
Pre-lab (5 pts) + notebook and Excel Template Submission (35pts). Report due at the beginning of the next Lab session.
- Exp. #2: Identification Based on % Metal Composition and % KClO_3 in a KCl/KClO_3 Mixture.
Pre-lab (5 pts) + notebook and Excel Template Submission (35pts). Report due at the beginning of the next Lab session.
- Exp. #3 Stoichiometry I. *Pre-lab (5 pts) + notebook and Excel Template Submission (35pts).* Report due at the beginning of the next Lab session.
- Exp. #4 Stoichiometry II. *Pre-lab (5 pts) + notebook and Excel Template Submission (35pts).* Report due at the beginning of the next Lab session.
- Exp. #5 Molecular Weight of a Low Boiling Liquid. *Pre-lab (5 pts) + notebook and Excel Template Submission (35pts).* Report due at the beginning of the next Lab session.
- Exp. #6 Titrations. Print out the Report form from the Chem. 142 lab web site and bring it with you to lab. *Pre-lab (5 pts) + notebook and Report form Submission (35pts).* Report due by the end of the lab period.

QUIZ SECTIONS— Be on time! See page 8 for schedule

The first part of the quiz section is devoted to a quiz on the material covered the previous week. The last part of the quiz section is devoted to helping you with difficulties in understanding the lecture and lab materials.

HOMework

This course uses internet-based homework exclusively.

You will both receive and submit your assignments online via the internet. Pay very careful attention to the due date. WebAssign keeps its own time and will cut you off at the exact deadline.

How to access WebAssign:

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 page:

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:

- Each student must purchase an access code (~\$6) to use WebAssign.
- 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 2-week grace period before access codes are enforced.
- 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.
- If you need additional help, see your TA or go to the Chem Study Center (BAG 330).

GENERAL HELP RESOURCES

- **Instructor:** See instructor office hours on the front page
- **Teaching Assistant:** Your teaching assistant (TA) will advise you of his/her office hours during the first week of the quarter. Your TA is an important person to your success.
- **Chemistry Study Center, Bagley 330:** The study center is open M to Th from 9:00 am to 6:00 pm and F from 9:00 am to 2:00 pm. The study center is staffed with experienced teaching assistants.
- **The Center for Learning and Undergraduate Enrichment.** This organization holds tutorial sessions in the evenings. See: <http://depts.washington.edu/clue/dropintutoring.html>
- **Undergraduate Services, Bagley 292/294.** The staff can help with scheduling problems, clicker or webassign problems, or issues that arise about the course.

MIDTERM EXAMS

There are 2 midterm exams. Midterm #1 (Ch. 1-2) Thursday, October 11 and **Midterm #2** (Ch. 3-5) Thursday, November 15. Chemistry knowledge is cumulative so questions on exams will often depend on knowledge from earlier chapters.

Exam Rules

1. Bring several number 2 pencils, your calculator, and a photo ID to all exams.
2. You must sit according to the *seating charts*, posted on the walls in the front of the classroom a few days before the exam.

Grading

- The fifty minute exams will be returned in quiz section.
- Keys to exams will be posted on the Chem 142 bulletin board in Bagley Hall.

Re-grading

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

Absences

If you are absent from a midterm examination through sickness or other valid unavoidable cause, you will be given a make-up exam.

Examples of unavoidable causes include: illness, death or serious illness in the immediate family, and, provided previous notification is given, observance of regularly scheduled religious obligations and attendance at academic conferences or field trips, or participation in university-sponsored activities such as debating contests or athletic competition. Athletes, bring a letter from your coach with your schedule for the quarter to Dr. Tracy Harvey in Bagley 294.

Procedures for making up a midterm exam:

1. Report your absence from an hourly examination within 72 hours to Dr. Tracy Harvey in Bagley 294, and
2. Bring proof of your emergency (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 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.

FINAL EXAM - Wednesday, December 12, 8:30 AM-10:20 AM, Rm 130 Kane Hall, (50% Ch. 1-5, 50% Ch. 6-8).

The first half of the final will cover lecture material presented since Midterm Exam 2. The second hour of the final will be a cumulative review of all lecture material through Midterm Exam 2.

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. If an incomplete is given, you must take the final exam for the same course in the next regular academic quarter in which it is offered to remove the incomplete.

COURSE SCHEDULE:

Week	Zumdahl Chapter	Lecture Topic	Quiz Section Topic	Laboratory Topic
1 09/26-09/28	1, A1.1-2, 5-6, A2.1-2	Keys to the Study of Chemistry, Basic Mathematical Concepts and Problem Solving (3 Lectures: W, Th, F).	Quiz Sections do not meet.	Lab does not meet.
2 10/01-10/05	2	Atoms, Molecules and Ions (4 Lectures: M, W, Th, F).	Quiz 1: Ch 1 and Appendices. Discuss atomic theory.	Lab does not meet.
3 10/08-01/12	3	Stoichiometry (3 Lectures: M, W, F) Midterm #1 (Ch. 1-2) Th, 10/11	Quiz 2: Ch 2. Discuss stoichiometry.	Lab 1: Physical Measurements.
4 10/15-10/19	3, 4	Stoichiometry (2 Lectures: M, W). Types of Chemical Reactions and Solution Stoichiometry (2 Lectures: Th, F).	Quiz 3: Ch 3. Discuss stoichiometry.	Lab 2: Composition of Two Compounds.
5 10/22-10/26	4, 5	Types of Chemical Reactions and Solution Stoichiometry (2 Lectures: M, W). Gases (1 Lecture: Th). No Lecture F.	Quiz 4: Ch 4. Discuss reactions and solution stoichiometry.	Lab 3: Stoichiometry I.
6 10/29-11/02	5	Gases (3 Lectures: M, Th, F). No Lecture, W.	Quiz 5: Ch 4. Discuss gases.	Lab 4: Stoichiometry II
7 11/05-11/9	6	Chemical Equilibrium (2 Lectures: M, W, Th). No Lecture, F (Holiday).	Quiz 6: Ch 5. Discuss equilibrium.	Lab 5: Molar Mass.
8 11/12-11/16	6, 7	Chemical Equilibrium (1 Lecture: M). No Lecture, W. Midterm #2 (Ch. 3-5) Th, 11/15. Acids and Bases (1 Lecture, F).	Quiz 7: Ch 6. Discuss acids and bases.	Lab does not meet.
9 11/19-11/23	7	Acids and Bases (2 Lectures: M, W). No Lectures, F (Holidays).	Quiz 8: Ch 7. Discuss buffers and titrations.	Lab does not meet.
10 11/26-11/30	8	Acids and Bases (2 Lectures: M, Th). Aqueous Equilibria (1 Lecture: F). No Lecture, W.	Quiz 9: Ch 7. Discuss aqueous equilibria	Lab 6: Titrations
11 12/03-12/07	1-8	Aqueous Equilibria (2 Lectures: M, Th) No Lecture, W. Review for final (1 Lecture: F).	Quiz 10: Ch 8. Review for final.	Lab does not meet.
12 12/10-12/14	1-8	Final Exam, W, 12/12, 8:30 AM – 10:20 AM. Rm 130 Kane Hall, (50% Ch. 1-5, 50% Ch. 6-8).	No Quiz Sections.	Lab does not meet.

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.

DISCUSSION AND LAB SECTIONS

Section	TA	Quiz Day	Time	Location	Lab Day	Time	Location
BA	Semiao	T	230-320	BNS 117	M	330-620	BAG 233
BB	Sharp	T	230-320	CHL 105	M	330-620	BAG 233
BC	Liang	T	130-220	LOW 222	M	630-920	BAG 291
BD	Johnson	T	230-320	SMI 404	M	630-920	BAG 291
BE	Ng	T	130-220	LOW 220	W	1230-320	BAG 291
BF	Reidel	T	1230-120	MGH 251	W	1230-320	BAG 291
BG	Burns	T	330-420	LOW 217	W	1230-320	BAG 233
BH	Aguirre de Carcer	T	830-920	DEN 311	W	1230-320	BAG 233
BI	Sharp	T	1030-1120	BLM 408	W	630-920	BAG 291
BJ	Sellers	T	1130-1220	SWS B010	W	630-920	BAG 291
BK	Liang	T	1030-1120	CDH 128B	Th	1230-320	BAG 291
BL	Reidel	T	930-1020	BNS 115	Th	1230-320	BAG 291
BM	Chung	T	230-320	MOR 230	Th	1230-320	BAG 233
BN	Stone	T	1130-1220	FTR 034	Th	1230-320	BAG 233
BO	Stone	T	130-220	GLD 436	Th	630-920	BAG 233
BP	Johnson	T	1230-120	DEN 212	Th	630-920	BAG 233
BQ	Aguirre de Carcer	T	1030-1120	CDH 128	Th	630-920	BAG 291
BR	Deer	T	830-920	DEN 213	Th	630-920	BAG 291
BS	Sellers	T	830-920	LOW 115	F	1130-220	BAG 233
BT	Burns	T	930-1020	MOR 230	F	1130-220	BAG 233
BU	Ng	T	1230-120	MGH 228	F	1130-220	BAG 291

Keys to Success

1. Attend ALL classes, pay close attention and take notes.
2. Chemistry is sequential and hierarchical. You must learn and digest today's lecture before you can expect to understand tomorrow's lecture. Study at least two hours for each hour of lecture. Spend one hour for every hour of lab. Find a place that allows for periods of uninterrupted study. Skim through chapter or sections to be covered in the next lecture.
3. Make daily, weekly and quarterly plans and follow plan.
4. Practice what you are to do on the exams. Work many problems.
5. Talk chemistry with fellow Chem. 142 students. The study center (Bagley 330) is a good meeting place.

Clicker Instructions

Clickers are an audience response system that uses similar technology to what you may have seen on TV game shows. During lecture, your instructor poses a multiple choice question within a PowerPoint slide in front of the classroom. Click your reply (just like a T.V. remote) from anywhere in the classroom by selecting a letter or number response on your clicker that corresponds to one of the answer choices on the slide. Your response is sent to a wireless receiver, collected and then sent to the classroom computer. There is a little LED light on the upper left side of your clicker. After you've sent your reply, the light will turn green for a short time to signal that your answer was received and stored.

NOTES:

- *Where to purchase a Clicker:* University Bookstore (~\$35)
- *Clicker ID Code:* Each clicker has a unique 6-digit identification alphanumeric code, located immediately below the bar code on the back of the clicker. Codes usually begin with '00','01','02','03', or '04'. This Clicker ID code is used to match your clicker responses to your name for grading purposes. You will need to enter this code in WebAssign in an assignment called "Clicker Registration". Note that if the code is entered incorrectly or is missing, you will not be able to receive any points toward your clicker score.
- *Lost Clickers:* Remember to bring your clicker to every lecture. If you lose your clicker, you need to buy another one at the bookstore and register the new Clicker ID code. If it's past the WebAssign deadline, send the new Clicker ID code to Bill Cusworth at cusworth@chem.washington.edu.
- *Clicker Grades:* Periodically, clicker grades for each lecture will be posted on WebAssign so that you can check if your clicker responses are being received. Responses will be counted as 2 points if correct and 1 point if incorrect. Therefore, you will have some points even you answered the questions incorrectly. Responses will start counting toward the clicker portion of your grade in the class after the due date for entering the Clicker ID code in WebAssign. The lowest 3 lecture scores (as a percentage) will be dropped. As a result of this policy, there will not be any accommodations made for excused absences from lecture. In other words, if you have to miss a lecture for whatever reason, you should still be able to obtain the maximum points because you can simply drop the scores of the missed lectures.
- *Setting the Frequency Channel:* The clickers come already set to the default frequency channel of 41. If your LED light blinks yellow and then red while answering a question in class, it usually means that you need to reset the frequency channel. Perform these steps:
 1. Press and release the "GO" button.
 2. While the LED light is flashing red and green, enter "41".
 3. Press "GO" again and the LED will show a solid green light for 3 seconds indicating that the channel has been reset. The LED will show a red light if unsuccessful.
- *Batteries:* Clickers are powered by two coin cell CR2032 (3.0V) Lithium Batteries. Batteries typically last for more than one year. Note that when you obtain a new clicker, you will need to remove the plastic strips from the battery contacts in order for it to work.
- If you need help with your clicker, see the folks in BAG 292 and bring your clicker with you. There is a station set up there to help diagnose problems.