SPRING 2012 C104: GENERAL INFORMATION AND SYLLABUS
Prof. M.B. Kramer Sect 010; 012
Lab Sections: 020L – 029L; 040L – 049L
OFFICE :210A DRAKE HALL
PHONE: 831 – 8151 EMAIL: kramermb@udel.edu

I. Lecture/Laboratory/Workshop

Lecture: Class meets MWF. PRS (clickers) will be used in class to assess ongoing comprehension. ARIS homework will be assigned on an ongoing basis.
Credit by Exam: Sign up ASAP. Given: Thursday 2/9, 7:00-10:00 PM
Laboratory: If you have completed the lab and wish to apply your previous lab grade to the present course, please see me ASAP.
Lab consists of pre – lab assignments, lab experiments, and post lab assignment
Workshop: Meets Thursday's 5-7 PM. Workshop is designed to work problems related to class work.

II. Course Material

REQUIRED
Textbook: Tro: Chemistry A molecular approach (2nd edition); Pearson ISBN 9780321651785
Lecture Notes: Kramer: Chem 104 Spring Section 010, 012
Lab Manual: Experiments for General Chemistry 2nd edition by UOD, Dept. of Chemistry/Biochemistry
Electronic Homework, Connect: On Line homework
PRS Device:- i - clicker
Lab Protection: Safety Goggles are **REQUIRED AT ALL TIMES IN THE LAB!**
Long Pants, Shoes & Shirts with Sleeves Required.
NO Shorts, Skirts, Sandals, Open Toed Shoes or Bare midriffs.
Calculator: a NON-PROGRAMMABLE, NON-GRAPHING CALCULATOR
OPTIONAL
Study Guide for the Tro Text: ISBN: 978-0-321-66788-5
Student Solutions Manual for the Tro Text: ISBN: 978-0-321-66754-0
Mike Rosen Study Guide to Surviving General Chemistry

III. Tentative Grading Scheme

Course: 3 exams @ 120 pts, quiz 120 total,
Laboratory 200 pts, Final Exam 150 pts,
Connect 60 pts. Workshops 50 pts, PRS 60 pts: Total 1000 pts
Letter Grade: Based on total points out of 1000 as follows:

A ≥ 920	B ≥ 770	C ≥ 620	D ≥ 490
A- ≥ 870	B- ≥ 720	C- ≥ 570	F < 490
B+ ≥ 820	C+ ≥ 670	D+ ≥ 530	

Laboratory: Prelab Assignments 15%(consists of: written procedure, MSDS, Prelab Demo), Experiments 50%, Post Lab Assignments 20%, Quizzes 10%, Discretionary 5%

IV. General Information

A. Lecture

1. There will be three (3) exams. The exam are given on Thursday from 5:00 – 6:45 PM
   3/15 4/19 5/10
2. MAKE – UP EXAMINATIONS WILL NOT BE GIVEN. If and exam is missed, the grade on the final will be substituted for the missed exam grade.
3. You may find it useful to maintain a running list of chemical terms, symbols, and equations for review purposes.
4. Lectures emphasize main themes. You are responsible for all related material in the text even if it is not explicitly covered in class.
5. Whether or not you are present in class, you are responsible for all material, including announcements, which are covered in the lecture.
6. Additional material may be place on the Sakai website as the course progresses.
7. Look over upcoming material before coming to class. e.g. topics, glossary of terms, section heading, etc. This will allow you to get more out of the lecture.

B. Laboratory

1. Labs begin on Monday, Feb 13, 2011.
2. GOGGLES are required in the laboratory. You will NOT be admitted to the laboratory without a pair of approved splash goggles. You can purchase them at the bookstore.
3. Pre-lab assignments are to be completed before you come to lab. They are to be turned in at the beginning of the lab period. Pre Lab assignment consists of:
   1) MSDS information: Following the directions on Sakai, write up MSDS information on two chemicals from the experiment for the week.
   2) Procedure: Write up the procedure for the experiment and show it to the TA at the beginning of the lab.
4. PreLab Demo : These are short demonstration of experiment techniques performed by the TA. Questions/Calculations are done by the students.
5. Laboratory Work: All laboratory work, including calculations and results, is to be completed and turned in before you leave the lab.
6. Post Lab Assignments: Post lab assignments are follow up material to the lab that has just been completed. It is turned in before you leave the lab.
7. It is expected that all laboratory work will be completed. If a lab must be missed, tell you lab instructor ahead of time if possible, and present a valid written excuse. If a lab is missed because of an unexpected emergency, present a valid written excuse to the instructor upon your return. Missed

labs CANNOT be made up and will be either EXCUSED or UNEXCUSED.

A. EXCUSED LABS will not be counted in your lab average. An EXCUSED LAB must have a written excuse from a parent, doctor, or other responsible person. This is given to the TA. PreLab material for the missed lab is to be completed and given to your TA at the next lab meeting.

B. UNEXCUSED LABS will have a grade of zero(0) for both the lab and prelab assignment.

8. THERE WILL BE NO MAKE UP LAB SECTIONS. An excessive number of missed labs (EXCUSED OR UNEXCUSED) will result in an Incomplete grade for the entire CHEM 103 course.

C. Connect Electronic Homework

1. Connect is designed as an electronic homework system. You will get the most benefit from it when you complete the sections as the work is covered in class.
2. You can purchase an access code at the bookstore
3. Each unit can be worked and reworked but only highest score will be recorded.
4. Computer may randomly change problems in each unit each time a unit is reworked.
5. Grading of connect assignments: Homework assignments: These are to be completed on a weekly basis and are due by Monday at 11:59PM. They are graded on a section by section basis and a grade of 60% or better on the section gives you full credit for the section. These are then averaged for your grade for that week. Your homework grade is the average of your weekly homework scores.

D. **WORKSHOPS**

Workshops will be held every Thursday from 5:00 – 6:30 PM. (There will be no Thursday workshop the week of the exams). Workshops are a peer led group work session. Workshop may consist of review of the previous weeks material, group work on the current assignment, group work on the current quiz assignment, or other work designated by the workshop leader.

E. **QUIZZES**

There will be at least one quiz for at least 10 pts due each Wednesday. Quizzes are answered electronically on Sakai. You will have 3 attempts for each quiz and the highest score is recorded. Most quizzes are due by 11:59PM on Wednesday. If you do not complete the quiz on time, you will have one attempt and it will be marked late.

There will be about 16 quizzes assigned throughout the semester. The best 12 scores will be counted for a possible total of 120 points.
Quizzes are an open book problem and learning situation.

F. Web Resources – other places to go for more problems and information

Purdue U: http://chemed.chem.purdue.edu/genchem/index.html
(exams) http://www.chem.purdue.edu/gchelp/115exams/index.html
(exmas) http://www.chem.purdue.edu/chm125/pproblems/contents.html
U of Wisc: http://genchem.chem.wisc.edu/exams/index.asp

G. EXAM REGRADING POLICY

In large, multi – section classes, much of the grading of exams is done by the teaching assistants. This is a common practice and is supervised by the professor of the course. Nonetheless, errors in grading sometimes occur. There may be cases in the course of this semester where you may believe that an error has been made in grading your work, and the correction of the error would result in a higher grade for you. The purpose of my regrading policy is to address this situation.

If you believe that an error has been made in grading or totaling the score on your exam, you may submit the exam for regrading. To do so, attach to the front of the exam a paper which states which questions you would like to have me reconsider and return the entire exam at the next class meeting. I will reconsider the questions, make any necessary adjustments to your grade, and return the exam to you in class at some future time. It is strongly recommended that you consult the posted answer keys before you submit our exam for regarding. Be advised, that I reserve the right to recheck the entire exam when you submit it.

IT IS A VIOLATION OF BOTH THIS POLICY AND THE UNIVERSITY OF DELAWARE HONOR CODE TO CHANGE ANSWERS ON YOUR EXAM BEFORE SUBMITTING THE EXAM FOR REGRADING. Exams may be photocopied and compared to any resubmitted work. Students who commit academic dishonest in this way will be prosecuted through the University of Delaware Student Judiciary System. (It is strongly recommended that any notes you wish to make to yourself on your graded exam be made in a different color of ink or pencil than the color used to take the exam. This will allow me to focus on the original answer if you submit your exam for regrade and will avoid the possibility of an accidental violation of this policy).

H. CHEM 104 Course Learning Goals

(Numbers in parentheses indicate the departmental learning goals (http://www.udel.edu/chem/goals.html) with which each course goal is aligned.)

After successful completion of this course, a student should be able to:

1. Describe key intermolecular forces and apply this knowledge in connecting molecular structures and physical properties of condensed states, including liquid crystals. (1)
2. Interpret/construct simple phase diagrams. (1)
3. Discuss the enthalpic, entropic, and external factors involved in solution formation and apply this knowledge in explaining/predicting the behavior of solutions; explain the effects that solutes have on solvent properties, and interpret experimental data/calculate predicted properties based on these effects. (1, 5)
4. Identify species as acids or bases according to various classification systems, and predict/interpret their chemical behavior according to these models (including gas phase, aqueous and nonaqueous solvent conditions); predict/rationalize pK_a, pK_b values for compounds based on molecular structure and inductive, resonant and steric effects. (1)
5. Recognize common organic functional groups, and name/interpret names for simple organic molecules; rationalize/predict products for simple organic reactions involving alkyl halides, carbonyl derivatives and alkenes. (1)
6. Explain the characteristic features of a system at equilibrium, evaluate a system's status with respect to equilibrium, and interpret/predict/calculate the effects of perturbations. (1)
7. Describe the basic features of structure determination through x-ray crystallography; know and apply the characteristics of simple unit cells and packing motifs in calculating/interpreting densities and packing efficiencies of crystalline solids; describe/explain/visualize common ionic structures and predict their occurrence using radius ratios; describe/predict/interpret common types of crystal defects; and calculate/predict lattice energies for ionic compounds. (1)
8. Know the distinguishing features/common types/formulas of electrolytes; apply that knowledge in explaining/visualizing/predicting the molecular level behavior of such substances in solution; explain/predict/calculate the quantitative conductivity behavior of electrolytes in solution. (1)
9. Explain/apply the connection between electronic structure and periodic trends in the prediction/analysis of the physical and chemical behavior of elements and compounds. (1)
10. Describe the characteristic features of covalent bonding and explain/apply their relationship to physical properties; write/analyze Lewis structures and explain/predict molecular geometries and polarities for covalent compounds; explain/apply valence bond and molecular orbital theory in evaluating bonding in covalent molecules and extended solids. (1)
11. Describe the characteristic features of metallic bonding and explain/apply their connection to physical and chemical properties of metals and alloys using both electron sea and band theory models; explain/predict the behavior of semiconductors/insulators using band theory. (1)
12. Describe empirical gas laws; explain/apply kinetic theory in the analysis/prediction of the behavior of ideal and real gases. (1)
13. Interpret/propose experiments and analyze kinetic data to determine reaction orders, rate laws, activation energies and mechanisms; explain/interpret/predict reaction mechanisms based on kinetic data, molecular structure and collision theory. (1, 5)

14. Explain the distinguishing features of voltaic and electrolytic cells, calculate cell potentials, and use/interpret reduction potential data to explain/predict chemical behavior; discuss key features of different types of batteries and electrolytic processes. (1)
15. Describe different types of nuclear decay processes and calculate associated changes in energy, predict nuclear stability based on nuclear shell model and N/Z ratios, recognize/explain processes of nuclear fusion and fission and their applications, and describe the effects of radiation on matter and common uses of radioactive materials. (1)
16. Work together with other students in discussing ideas, evaluating information and formulating solutions to problems. (8)
17. Communicate ideas clearly and effectively in written and oral formats. (10)
18. Find and evaluate sources and information needed in solving problems. (3)