

Sam Houston State University

Course Syllabus
(Tentative**)
CHM 139.01
General Chemistry II
3-Semester Credit Hours
Classroom CFS 103
M-F 10:00-11:50

Instructor:	Dr. Benny E. Arney	Semester:	Summer II, 2008
Office Phone:	294-1531 off-campus ext. 41531 on-campus	Email:	CHM_BE@SHSU.EDU
Office:	CFS-326 or May also be found in CFS-305 or CFS-317 or CFS-323.	Office Hours	Mon-Thur: 1:00-3:00 PM

Textbook

**Brown, LeMay, and Bursten, "Chemistry: The Central Science", 10 th ed.,
Prentice-Hall, Upper Saddle River, NJ, 1997.**

Description

This is the **second half of a two-semester sequence** in introductory chemistry. As such, it is very heavily dependent on the material and concepts from the first half. Topics include gas-laws, properties of solutions, chemical kinetics, equilibria, acid-base chemistry, ionic equilibria in aqueous solutions, entropy, free energy, and chemical spontaneity, electrochemistry, and coordination chemistry.

Prerequisite: Students in this course must have successfully **completed CHM 138 with a grade of C or higher.**

Format: After the first day of class, each student is expected to have read and outlined each assigned chapter before the day it shows up in the schedule, below. Class time will focus on a quick review of the concepts and principles then using and applying the material from the required readings.

**** Changes to this document may be made by the professor if necessary in order to achieve the aims and purposes of the course, but only be performed in writing in class.**

Required Materials

It will be essential for you to have your own hand-held calculator (that can perform log functions and exponential notation) for homework and classwork. Also, you are expected to keep a notebook for all homework assignments.

Class Room Rules:

1. No cell-phones or pagers are to be turned on in class. If it goes off, you will be ejected from the class until after the mid-way break or until the next class period.
2. No use of personal electronics in class. This include computers, recorders, i-pods, mp3-players, etc.
3. No personal conversations during class time.
4. No working on other subjects or activities not specifically a part of this class.
5. No hats are to be worn in class.
6. You are expected to have read the assigned chapters before coming to class.
7. You are expected to bring your book and your calculator to class.
8. You are expected to know how to use your calculator, because I do not.

Objectives

It is an overall goal of this course to improve the problem solving and mathematical skills of all students enrolled. In addition, students successfully completing this course should be able to:

1. Convert between differing standard expressions of concentrations
2. Calculate osmotic pressure, boiling point elevation, and freezing point depression of solutions
3. Calculate the Molar mass of a solute from its colligative properties
4. Explain and interpret the dissolution of different type of solutes in a solvent
5. Deduce a rate law from experimental reaction data
6. Use the rate law to determine concentrations of species at a specified time
7. Explain the influence of catalysts on certain reaction rates
8. Discuss reaction mechanisms and their connection to reaction rates

9. Write and use equilibrium expressions for chemical reactions
10. Calculate final concentrations of species involved in an equilibrium
11. Predict changes to equilibria subjected to an external disturbance
12. Predict the solubility of salts in aqueous solution
13. Understand the pH scale and its application to acid-base chemistry
14. Design and prepare buffers to control the pH of aqueous solutions
15. Define the terms enthalpy, entropy, and free energy
16. Apply the First and Second Laws of Thermodynamics
17. Use Hess's Law and thermodynamic tables to predict the heat of reaction
18. Predict the spontaneity of reactions using free energy data
19. Relate free energies to chemical equilibria
20. Apply and utilize the concepts and principles of electrochemistry.
21. Understand the relationship of equilibria, thermodynamics, and electrochemistry.
22. Understand and use basic structural formulas and concepts associated with coordination compounds.

Techniques

Before each class meeting, it will be essential for you to complete the assigned reading and homework so that lectures might be supplemented with appropriate questions and valuable discussion. **If you are having difficulty with any of the assignments, it is your responsibility to make regular visits to my office and/or the chemistry tutors. DO NOT WAIT UNTIL THE TESTS TO FIGURE OUT THAT YOU DO NOT GET IT!**

Attendance Policy

It will be essential for you to attend class regularly. Class attendance will be taken. There will be no make-ups for tests missed due to absences.

Make-ups & Early Tests: There are none, so do not ask!!

Regrades:

If the student believes a test was not graded correctly, they must submit to the instructor their reasons for requesting a regrade **in writing** within 2 class-days of the test. Verbal requests or requests later than 2 days will not be considered. Any regrade request that is honored will be over the entire test, not just the disputed portions.

Examinations:**Rules:**

1. During Tests, all cell-phones and /or pagers are to be turned off and left in backpack at the front of the class. Any student with a cell-phone or calculator at their desk during a test will be ejected from the room and their test taken up. If their cell-phone or pager goes off during a test, they will be ejected and their test taken up.
2. No calculators!!!! NO ELECTRONICS OF ANY TYPE!!!!
3. No hats may be worn in class.
4. If you leave the room for any reason you have finished taking the test and it will be taken up.

There will be **three**, one-hour in-class, closed-book examinations each worth 100 points. They will be given in the second half of the class period. If an exam has been missed due to absence, it will be replaced by the percentage score on the final examination. If more than one exam is missed, the additional missed exam will be averaged in as a 0. The tests count for total of 300 points.

A final, **comprehensive** examination (covering **both semesters**) will be given at the University scheduled time. This will also be worth 200 points. All students must complete this exam (the score obtained can not be dropped). Therefore, the total number of exam points possible is 500. Failure to take this the final will result in an automatic F for the course.

The Course Grade

Prior to the completion of the final exam, there is no course grade associated with the course. A course letter grade will be assigned based on your total accumulated points after completion of the final examination:

4 (A)	425 – above (85%)
3 (B)	375 – 424 (75-84%)
2 (C)	325 – 374 (65-74%)
1 (D)	275 – 324 (55-64%)

0 (F)	274 or below
-------	--------------

Writing Standards

Students enrolled in this course are expected to use literate and effective English in their speech and in their writing. All papers submitted must be well-written; grades on written work (including examinations) will be based on expression as well as on content.

Schedule for Lectures (Tentative)

Date	Topic	Reading Assignment: To be read by this date
July 8	Introduction, Gases	10
9	Gases	
10	Gases & Solutions	13
11	Solutions and Kinetics Last day to drop w/o a "Q" and receive 100% refund. , Test#1	14
14	Kinetics	
15	Kinetics & Equilibrium	15
16	Equilibrium	
17	Equilibrium & Acids and Bases	16
18	Acids and Bases & Other Aqueous Equilibria Last day for drop w/o a grade of "F" or to resign w/o "WP" or "WF". , <u>EXAM 2</u>	17
21	Aqueous Equilibria	
22	Aqueous Equilibria & Thermodynamics	19
23	Thermodynamics	

24	Thermodynamics	
28	Electrochemistry	20
29	Electrochemistry	
30	Nuclear Chemistry	21
31	Nuclear Chemistry & <u>Exam 3</u>	
4	Coordination Chemistry	24
5	Coordination Chemistry	
6	Finish Up and Problems, Last day for resignations receiving a “W”. Last day to drop without receiving an “F”, before taking any scheduled exams or the last business day, whichever comes first.	
7	Final Examination	

Homework Problems

You must work out the solutions to the **red** exercises at the end of each chapter in order to understand the concepts being covered and in order to pass this course. Doing more will help more. This is to be taken as a minimum requirement as many of the problems on the tests will be very much like those at the end of the chapters.

HINT: COPY THE PROBLEMS AND ANY NECESSARY TABLES OF DATA NEEDED, CLOSE YOUR BOOKS, STUDY GUIDES, ETC. AND WORK THEM COLD. This is what the tests will be like.

Final Exam (Comprehensive for the semester plus the following):

Ch(s): 1,2,3,4,5,6,7,8,9