CH152 "FUNDAMENTALS OF CHEMISTRY II"
Tentative Syllabus - Spring 2009 - Dr. Angel

INTRODUCTION:

Observation of an old teacher

Over the last seventeen years, I have found no statistical correlation between how well students perform in this class and their high school math/chemistry grades or SAT/ACT scores. Students who earn the highest marks in this class are those who find the time to work problems daily and are diligently enough in their efforts to eventually find chemistry interesting and rewarding.

Lecture material

This class moves quickly. It may not seem too bad at first, but we gain momentum. Don't get caught napping: when the train leaves the station, it's almost impossible to catch. You need to stay ahead of lecture. The best way to do this is to cover the material in the text prior to lecture. Work the in-chapter problems as they are presented. Study lecture notes after each class; rework lecture problems for clarity; work end-chapter problems. Come to class prepared and ready to ask questions.

Textbook

Never open your text without at least a pencil. A pad of paper and calculator also help. Work your text. Write all over it: write in the margins; write questions and equations in the margins; underline; highlight. Each time you come to an "Example" problem in the chapter, cover up the answer, read the question, and solve. This is an excellent way to check your understanding of the text material just presented. Your textbook is a "keeper". Plan to keep this text with you the remainder of your life. Your handwritten notes will make it more readable. Years after this class, you will refer to it occasionally, maybe often. If you don't have it, you'll wish you did. I have my fundamental math, physics and biology texts. I refer to them frequently.

Homework

There are informal and formal homework assignments. The formal homework will be assigned and graded, as explained under "Evaluation" below; however, your informal homework will ultimately determine what you learn and your grade in this class. Informal homework includes attentively attending class and recitation, reviewing/rewriting your notes, reading your text and working problems in your text and on-line quizzes. End-of-chapter questions in red have the answers in the back of your text. On-line quizzes (as well as handouts) may be found on the CH152A homepage: http://www.washburn.edu/faculty/sangel/Courses/CH152.htm. Formal graded homework may be accessed at http://www.masteringchemistry.com/. Clearly, learning takes time. I reiterate, the more time you spend, the more you will learn, and the more you will enjoy this class, all of which will be reflected by your earned grade. There are no short cuts through this material. RDA: 2 – 3 hours *each* day, 6 days a week (not 12 hours before an exam).

Exams

I will explicitly indicate to you when memorization is required. Otherwise, memorization is a crutch that will eventually weaken your ability to stand on the fundamentals you need to learn. Memorization is easy and perhaps a study convention with which you've grown familiar; however, it will hurt you more in this class than it will help. Students who try to memorize don't learn and don't find the connection between lecture/recitation and the exams. Clearly, nature is filled with unnumbered examples of chemistry and information. There is little chance that an example used in lecture, recitation, or on-line quiz would be the same example on your exam. You will be presented with *concepts* in lecture and in your text. You need to understand the implications of those concepts. Then you will see how they apply to examples used in class, and subsequently on the exams. Your responsibility on a given problem will be to determine which concept (algorithm) will work and what information, provided in the problem, is important. Time is sometimes a factor on exams, although that is never the intention. To develop competency and speed, practice by solving as many problems as your study schedule permits- see "Homework" above.

COURSE OBJECTIVES:
As a continuation of your first year in college chemistry, this semester will further develop and exemplify applications of fundamental chemical principles. These principles will build and strengthen your foundation for future studies in all disciplines of science. Practical application will require both the understanding of these principles and an ability to analyze data. Analysis, in turn, will require a working knowledge of mathematical principles. In essence, you will create physical models of a chemical world and use math, in many cases, to interpret the models and make predictions.

This class may be applied toward general education credit in Natural Sciences, Mathematics and Statistics. It will emphasize three general education skills: 1."Reason Mathematically and Understand Numerical Data"; 2. "Process Information Both in Terms of Synthesis and Analysis"; 3. "Solve Problems Using Methods of Analysis Considering Evidence, Relevance and Validity"

EVALUATION:

Exams	50%	A: 100%-90.%
Lab	20%	B: 89%-80.%
Final	30%	C: 79%-70.%
Total	100%	D: 69%-60.%
		F: 59%-0%

Chapter Exams: There are five with one optional make-up exam scheduled. Each chapter exam is 10% of your grade. If you have a legitimate conflict with a chapter exam date, you may take that exam *prior* to the scheduled date. You may use the optional make-up exam to cover for a missed chapter exam or a low chapter exam score: the optional make-up exam will replace your lowest chapter exam score; it cannot hurt your grade. It is a good review for the final. No other make-up exams will be offered.
Homework: Formal Homework. On-line homework may be accessed at http://www.masteringchemistry.com/. You should have received an access code with the purchase of your text. If not, you may purchase one on-line. The Course ID is MCANGEL94223. Use your WID as your student number. Please use your first and last name as it appears on your transcript. The school zip code is 66621. Become acquainted with the software through the assigned introduction as soon as possible. This formal homework will count as extra credit on exams: Percentage extra credit points (ecp) on the exam will correspond to your average homework percentage grade: 100% - 90% = 5 ecp; 89% - 80% = 4 ecp; 79% - 70% = 3 ecp; 69% - 60% = 2 ecp. (It is possible to earn a score of 105% on an exam.) All homework has a due date. You are strongly encouraged to start work on this homework the first (not the last) day of the chapter material as presented on the Calendar. Some homework assignments may take over four hours to complete: do not plan to complete it all in one session. (Count on some problems with the on-line homework: this is anticipated in the range of scores needed for extra credit.)
Final Exam: This exam is the standardized American Chemical Society exam. It is a timed, comprehensive exam, which covers *both* semesters.

SCHEDULED OFFICE HOURS:
Office: M: 4-5; T: 9-10; W: 9-11; R: 2-3
You may prearrange meetings outside these scheduled office hours: stephen.angel@washburn.edu; 670-2266.

ADDITIONAL ASSISTANCE:
Tutors (http://www.washburn.edu/cas/chemistry/tutors.html) and a student supplemental instructor (SI – Josh Freeby) are provided for this class free of additional charges.

CALENDAR[±]:

DATE	CHAPTERS	CONCEPTS
1/21	8	Review: Coulombs Law; I.E.; Bonds
1/23	9	VSEPR
1/26	9	Molecular, Electron Pair Geometry, Polarity
1/28	9	Hybridization, Valence Bond Theory
1/30	9	Molecular Orbital Theory
2/2	11.2	Intermolecular Forces
2/4	10.9	Real Gas Behavior
2/6	**EXAM #1**	
2/9	11	Vapor Pressure; Clausius-Clapeyron Eq
2/11	11	Phase Diagram
2/13	11	Solids: Metals; Alloys; Ionic Compounds; Molecular/Network
2/16	11	Solids: Structures
2/18	13 (Handout)	Concentrations
2/20	13	Solution Characteristics/Ideal Solutions
2/23	13	Solubilities
2/25	13	Colligative Properties
2/27	**EXAM #2**	
3/2	14	Intro to Kinetics: Rates
3/4	14	Rate Law ; Orders of Reactions
3/6	14	Rate Constant: Activation Energy; Catalyst
3/9	14	Mechanisms; Molecularity
3/11	15	Intro to Equilibrium: constants/quotients
3/13	15	Equilibrium concentrations
3/16-22	**S P R I N G B R E A K**	
3/23	15	Le Chatelier's Principle
3/25	**EXAM #3**	
3/27	16	K_w; pH/pOH; Acids/Bases/Salts
3/30	16	Acid/Base Equilibria
4/1	16	pK_a/pK_b/pH/pOH
4/3(Last day: W & P/F)	17	Titrations
4/6	17	Buffers
4/8	17	Solubility Constants
4/10	17	Selective Precipitation
4/13	**EXAM #4**	
4/15	19	Thermodynamic Laws
4/17	19	Free Energy
4/20	19	Predicting direction of spontaneous reactions
4/22	19	Non-standard conditions
4/24	20	Intro to Electrochemistry
4/27	20	Voltaic/Galvanic Cells
4/29	20	Electromotive Force
5/1	20	Nernst Equation
5/4	**EXAM #5**	
5/6	Make-up Exam	(4 – 8 PM. Location to be announced)
5/8	Review	
5/13 (Wednesday)	**FINAL EXAM** ***1:30 pm*** (Prompt start is mandatory: timed exam.) Comprehensive - First Year College Chemistry. Standardized American Chemical Society (ACS) Exam	

[±] *This is the first iteration using this text; therefore, the "calendar" is a tentative assignment: anticipate changes. Chapters listed are from the required text:" CHEMISTRY, The Central Science" by Brown, LeMay, Bursten, Murphy. *All sections of CSB need to be recorded by 11 PM on the dates specified: plan ahead.*

Generic University Syllabus Information:

Select Mission of the University:
Washburn University shall prepare qualified individuals for careers, further study and life long learning through excellence in teaching and scholarly work. Washburn University shall make a special effort to help individuals reach their full academic potential. *Washburn University Board of Regents, 1999*

Academic Misconduct Policy:
All students are expected to conduct themselves appropriately and ethically in their academic work. Inappropriate and unethical behavior includes (but is not limited to) giving or receiving unauthorized aid on examinations or in the preparation of papers or other assignments, or knowingly misrepresenting the source of academic work. Washburn University's Academic Impropriety Policy describes academically unethical behavior in greater detail and explains the actions that may be taken when such behavior occurs. For guidelines regarding protection of copyright, consult www.washburn.edu/copyright/students. For a complete copy of the Academic Impropriety Policy, contact the office of the Vice President for Academic Affairs, Bradbury Thompson Alumni Center Suite 200, or go on-line to: www.washburn.edu/admin/vpaa/fachdbk/FHsec7.html#VIII

Disability Services:
The Student Services Office is responsible for assisting in arranging accommodations and for identifying resources on campus for persons with disabilities. Qualified students with disabilities must register with the office to be eligible for services. The office MUST have appropriate documentation on file in order to provide services. Accommodations may include in-class note takers, test readers and/or scribes, adaptive computer technology, brailled materials. Requests for accommodations should be submitted at least two months before services should begin; however, if you need an accommodation this semester, please contact the Student Services Office immediately.

Location: Student Services, Morgan Hall Room 150
Phone: 785-670-1629 or TDD 785-670-1025
E-Mail: student-services@washburn.edu

Students may voluntarily identify themselves to the instructor for a referral to the Student Services Office.

Center for Undergraduate Studies and Programs (CUSP):
As a Washburn student, you may experience difficulty with issues such as studying, personal problems, time management, or choice of major, classes, or employment. The Center for Undergraduate Studies and Programs (Office of Academic Advising , Educational Opportunity Program, and Office of Career Counseling, Testing and Assessment) is available to help students either directly through academic advising, mentoring, career counseling, testing and developing learning strategies or by identifying the appropriate University resource. If you feel you need someone with whom to discuss an issue confidentially and free of charge, contact CUSP in Morgan 122, 785-670-1299, advising@washburn.edu.

Withdrawal Policy:
During fall and spring semesters, students may withdraw from full semester courses through the second week of class with no recorded grade. From the third through the eleventh week a "W" is recorded for any dropped course. Beginning with the start of the twelfth week, there are NO withdrawals, and a grade will be assigned for the course. For short-term or summer course deadlines, please check the appropriate Semester/Session Course Bulletin Web Site (www.washburn.edu/schedule)

Official E-Mail Address:
Your Washburn University e-mail address will be the official address used by the University for relaying important messages regarding academic and financial information and the University will consider this your official notification for important information. It may also be used by your instructors to provide specific course information. If you prefer to use an alternate e-mail address to receive official University notices, you can access your MyWashburn e-mail account, choose the "Options" tab, and select "Settings", scroll to the bottom of the screen and enter the e-mail address you would like your Washburn emails forwarded to in the "mail forwarding" area. Click on save changes. This will complete the process of forwarding your Washburn e-mail. It is your responsibility to ensure that your official e-mail box does not exceed your message quota resulting in the inability of e-mail messages to be accepted into your mailbox