CHEMISTRY 210 SYLLABUS
Spring 2007
General Chemistry II

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Classroom: SL118

Office: Hagen 407J
Office Hours: Mon 10:30-11:30, 3:30-5:30
Tues 9:30-10:30, 2:30-5:30
Wed 10:30-11:30
Thurs: 10:30-11:30
Fri: 10:30-11:30

Required Text and Materials:
1) Text: "CHEMISTRY The Molecular Science, 2nd Edition" by Moore/Stanitski/Jurs
2) OWL web-based learning access
Recommended: Student Solutions Manual: Detailed, step-by-step solutions to book problems.

Test Schedule

Test #1:	Ch. 11 Liquids, and Solids, and Materials
Monday, Feb 12	Ch. 10 Gases and the Ideal Gas Law
	Ch. 15 The Chemistry of Solutes and Solutions
	Ch. 13 Chemical Kinetics: Rates of Reactions
Test #2:	Ch. 14 Chemical Equilibrium
Wednesday, Mar 7	Ch. 16 Acids and Bases
Test #3:	Ch. 17 Additional Aqueous Equilibria
Wednesday, April 4	Ch. 18 Thermodynamics: Directionality of Chemical Reactions
Test #4:	Ch. 19 Electrochemistry and Its Applications
Friday, April 27	Ch. 20 Nuclear Chemistry
Final Exam	Comprehensive
Friday, May 4, 12:00 noon	

Grading Summary:

Tests	400 points (4 x 100)
Final exam	150 points (1 x 150)
OWL Homework	100 points
Take-Home Quizzes	??? points
Lab	25% of total

Tentative letter grades

A	≥90%
B	≥78%
C	≥66%
D	≥54%

- The instructor may lower but will not raise the numbers required for a letter grade.

Attendance: **Perfect attendance will be rewarded with 10 points of extra credit** and a single absence with 5 points of extra credit. Be sure to sign the attendance sheet each day!

Final Exam: The final exam will be cumulative.

Jasperse website: http://www.mnstate.edu/jasperse/
This will include copies of:
- handouts
- quizzes
- practice tests and practice text answers
- old notes.

Practice Tests/Review Sessions: I will normally hold one or two practice test review sessions prior to each test.

Class E-Mail List
An email list will be used to notify you of special scheduling information or other miscellany. (If I am sick and won't be able to hold class; when and where practice tests are to be held; if there are errors in one of the practice tests or book problems or in something I communicated in class, etc.) The list uses your e-mail address listed in the university directory. To check that your e-mail address is current, or to correct it if it isn't, do the following:

- Login at the msum eservices page, just as if you were going to register for classes (http://www.mnstate.edu/home/NEWREG.HTM)
- Click on "STUDENT" (on top)
- Click on "Demographics" on the left.
- Check or correct the listed e-mail address.
- Note: If using a yahoo account, the default may treat class e-mails as junk.

HOMEWORK

DOING HOMEWORK PROBLEMS REGULARLY AND FAITHFULLY IS THE BEST WAY TO ENSURE A HAPPY AND SUCCESSFUL OUTCOME IN THIS CLASS!
Note: Doing the OWL homework is necessary but not sufficient to succeed in the class. It's only a start; you'll probably need more practice problems to get a good grade.

OWL: OWL assignments will be made regularly, normally no later than the end of each lecture day. I will normally make them due by midnight 3 days later, according to the following schedule:

Lecture Material	Latest Posted Time for Related OWL Assignments	Due Time for OWL Assignment
Monday	Monday midnight	Thursday midnight
Wednesday	Wednesday midnight	Sunday midnight
Friday	Friday midnight	Tuesday midnight

Suggested Study Strategy (and OWL strategy): Diving right into homework problems isn't very useful if you don't know how to solve them! Learn the material first!

1. Read/think through your class notes twice before attacking the OWL assignments.
2. Do any "Problem-Solving Examples" and "Problem-Solving Practice" problems in the appropriate sections of the book. (Answers are in back of book).
3. Third, do your OWL problems.
4. Do the recommended in-chapter Exercises. (Answers are in back of book).
5. Do back-of-chapter review problems. I'm listing a ton, ones that I consider fair game and testable type problems. Try to at least do most of the problems with bold numbers. (Answers are in back of book. Additional explanations about solutions are in the Solutions Manual, which you would do well to buy, but which will also be in the library reserve.)
6. Read the text. It really helps; you will learn a ton; things on which I was unclear or too fast in class you can process at your own speed. You may wish to move this up to a much higher number!

Course Description
CHEM 210 General Chemistry II (4 credits)
General chemistry principles: kinetics, chemical equilibrium, acid-base chemistry, solubility equilibrium, thermodynamics, oxidation-reduction, electrochemistry, coordination chemistry, and nuclear chemistry. Lab included. **Prerequisite:** Chem 200

Student Learning Outcomes/Course Objectives
The general outcome goals are that students will understand the fundamental principles associated with kinetics, chemical equilibrium, acid-base chemistry, solubility equilibrium, thermodynamics, oxidation-reduction, and electrochemistry. A general summary of major learning topics is summarized on page 1, with the listing of chapters that will be covered. A more detailed list of learning topics is summarized on page 4, with an approximately day-by-day listing of topic coverage. Most of the learning outcomes will be assessed by having students demonstrate and apply understanding in the context of case study problems. The list of problems on page 3 represents a detailed and representative sampling of the types of problems that should be solvable by a student who has achieved all the learning outcomes.

Academic Honesty
Cheating will not be tolerated and will be reported to the Dean of your College and the Vice President for Academic Affairs. It may also be reported to the Student Conduct Committee for further disciplinary action. For a full description of the MSUM Academic Honesty Policy, please see the Student Handbook. (http://wwwmnstate.edu/sthandbook/POLICY/index.htm)

Special Accommodations Students with disabilities who believe they may need an accommodation in this class are encouraged to contact Greg Toutges, Coordinator of Disability Services at 477-5859 (Voice) or 1-800-627-3529 (MRS/TTY), CMU 114 as soon as possible to ensure that accommodations are implemented in a timely fashion.

Recommended Book Problems, Chem 210:

Ch.	Problem-Solving Examples/Practice	Exercises	Review Question At the Back of The Chapter
9	6 (omit a), 7,8	6-7	45,46, 47(skip c), 48(skip b), 49, 50, 55, 58, 59, 60, 61, 62a- 96-99
11	2-5,8	1-8, 11, 12, 16	1-3, 5-7, 11-16, 18-26, 33-41, 42(lowest only), 45, 47(skip d), 48-52, 75, 87, 88, 91, 92, 94, 95
10	2-9	3,4, 7, 8, 11	2, 3, 8, 15a-c, 16a,b, 27-42, 44-48
15	1,2	1,2,4	1-3, 6, 23, 24, 25(literally per 1L of water), 26, 28, 29, 55, 56, 89, 90, 96-99, 105
13	1-4, 6,7,10	1a,c, 4, 5(2nd part) 7, 9, 10, 12	2, 3, 6, 9, 11b,c,12b,c,13-16, 17(skip a,b), 18 (skip a,b), 19-26, 28-33, 36-38, 40-42, 45-46, 64-74, 75 92, 78-80, 82, 97-101, 104, 106-109
14	1, 3-6, 8,9 (7 is good, but some quadratic involved)	3,6,8,10,11	2, 4-6, 8,9,11,12(K=2), 13-19, 29-32, 34-43, 45a,b, 47, 51-60, 62-65, 75-76, 74, 83, 86
16	1-12	1, 3-8, 10-11, 18-20, 23	2, 4, 7-9, 11-28, 31-44, 47-65 (see Table p 782 for many of the previous problems), 67-70, 71b,c, 72, 73b,c, 86, 88, 90, 93-96, 99-102, 103, 107, 120
17	1-11	1-4, 6-10	2-4, 8-10, 15-28, 30, 32, 33a-d, 34, 35, 38, 39, 42-46, 51-62, 76-84, 86-88, 90, 92
18	2,3,5-7	1,4,7-10	6, 16,17,21-28, 31-34, 39-44, 48-56, 58, 62-64, 66, 67, 71, 72, 112, 132
19	1,2,5-10, 12	1,5,11,13, 15	1,5-7, 10a-d, 12, 13, 14a,b,e,f 15a,b,e,f 16, 18-21, 24-32, 34-45, 56, 58, 59, 60-63, 81, 83
20	1-7	1,2,5,6,8,11, 13, 15, 16	1-3, 5, 6, 8, 11-16, 18,19, 25-39, 55-61

Date	**Chemistry 210, Jasperse, Spring 2007** Topic	Reading Assignment
10-Jan	Intro. Liquids, Solids, and Noncovalent/Intermolecular Forces between Molecules.	11.1, 9.6
12-Jan	Noncovalent/Intermolecular Forces between Molecules.	9.6
15-Jan	No Class. Martin Luther King Day.	-
17-Jan	Liquid State, Vapor Pressure, Phase Changes, Phase Diagrams, Solids	11.1-6
19-Jan	Bonding in Solids Omit: 15.5,6,9,10	11.5-7,9
22-Jan	Gas Chemistry	10.2-6
24-Jan	Solubility and What Impacts Solubility	15.1-3
26-Jan	Factors Affecting Solubility; Impact of Dissolved Solutes on Solution Properties; Concentrations	15.6,7
29-Jan	Reaction Rates; Dependence on Concentrations	13.1-2
31-Jan	Reaction Rates, Rate Laws	13.2-3
2-Feb	Elementary Reactions; Temperature Effects; Rate Laws; Reaction Mechanisms	13.3-7
5-Feb	Catalysts; Catchup	13.8-10
7-Feb	Equilibrium, Equilibrium Constants	14.1-2
9-Feb	Equilibrium Constants: Determining Them, the Meaning Of Them, and Using Them	14.3-5
12-Feb	Test 1, Chapters 11, 15, and 13	Test 1
14-Feb	Shifting Equilibria: When an Equilibrium is Disturbed. LeChatelier's Principle	14.6-8
16-Feb	Acids/Bases; Dissociation of Water	16.1-3
19-Feb	pH Scale; Ka and Kb Constants	16.4-5
21-Feb	Ka and Kb Constants; Problem Solving Using Ka and Kb	16.5-7
23-Feb	Ka and Kb Constants; Problem Solving Using Ka and Kb	16.5-7
26-Feb	Molecular Structure and Acid Strength	16.5-7
28-Feb	Acid-Base Behavior of Salts; Lewis Acids and Bases	16.8-10
2-Mar	Catchup	-
5-Mar	Buffer Solutions	17.1
7-Mar	Test 2, Chapters 14 and 16	Test 2
9-Mar	Acid-Base Titrations; Acid Rain	17.2-3
12-Mar	Spring Break	-
14-Mar	Spring Break	-
16-Mar	Spring Break	-
19-Mar	Solubility	17.4
21-Mar	Factors That Affect Solubility	17.5-6
23-Mar	Reaction Direction; Probability; Entropy	18.1-3
26-Mar	Entropy, Entropy Changes, and 2nd Law of Thermodynamics	18.3-5
28-Mar	Free Energy and the Equilibirum Constant, Miscellaneous	18.6-11
30-Mar	catchup	catchup
2-Apr	Oxidation Numbers, Oxidation-Reduction Reactions	5.4, 19.1
4-Apr	Test 3, Chapters 17 and 18	Test 3
6-Apr	Balancing Redox Reactions, Electrochemical Cells	19.2-3
9-Apr	No Class, Easter Monday	-
11-Apr	Cell Voltage, Using Standard Cell Potentials	19.4-5
13-Apr	Voltage/Free Energy/Concentration Relationship, Neuron Cells, Common Batteries	19.6-10
16-Apr	Electrolysis, Counting Electrons, Corrosion	19.11-13
18-Apr	Radioactivity, Nuclear Reactions, Patterns of Nuclear Stability	20.1-3
20-Apr	Nuclear Transmutations, Rates of Radioactive Decay	20.3-5
23-Apr	Fission, Fusion, Radiation, Applications	20.6-9
25-Apr	catchup	catchup
27-Apr	Test 4, Chapters 19 and 20	Test 4
30-Apr	Class Evaluations, Final Exam Practice	Practice
4-May	Final Exam, **12-noon**., Friday	Final Exam