

**UNIVERSITY CHEMISTRY**  
**CHEM 1510**  
**Autumn, 2005**

**Instructor:** Dr. Sheldon S. York  
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**Text:** Chemistry, 4th Edition, Silberberg, 2006, McGraw-Hill

**Lectures:** 8-8:50 a.m., MWF, Olin 205

**Discussion:** 8-8:50 a.m., Th, Olin 205

**The Experimental Basis of Chemistry:** 8-8:50 a.m., T, Olin 205

In this Tuesday meeting we will consider various experiments and instrumentation that have provided important pieces of chemical information. You will be expected to actively participate in discussions during this class. To prepare for these discussions, you must read the assigned material before coming to class. Reading assignments taken from your text are listed in the Lecture and Homework Schedule that is attached. Other reading assignments will be distributed in class. Your grade on this portion of the course, which will count one-quarter of your total grade, will depend partly on class participation and partly on reports that you will write.

**Discussion:** Discussion is an additional class meeting each week. It gives you an extra opportunity to ask questions about homework and the lectures. Each Discussion will include a ten minute quiz, except during the weeks immediately following the hour exams. The four best quizzes will count towards an overall discussion grade.

**Homework:** Each lecture has a group of homework problems assigned to it. The problems are taken from the Problems section at the end of each chapter, and are chosen to prepare you for the hour exams. If you understand and can do all the homework, you probably will do well on the exams. There are many additional problems at the end of each chapter, grouped according to subject area. It is a good idea to work some of these extra problems in the areas where you are having difficulties. To get the most benefit from homework, you should do the assignments on schedule.

**The homework assignments are to be turned in at discussion.**

**Exams:** There are three one-hour exams during the quarter, plus a two-hour cumulative final exam. Each exam counts 200 points. Exam problems will be similar to the problems assigned as homework and the problems worked in class.

If you miss an hour exam, then your final exam will be counted twice and replace the missed hour exam. With one exception, **THERE WILL BE NO MAKEUP EXAMS.** The only

exception to the no-makeup policy will be for members of a University team or group, e.g. athletic team or music group, scheduled to be away from campus at the time of the exam. You must inform your instructor of this prior to the exam and make arrangements at that time for a makeup exam.

If you take all three hour exams and your grade on the final exam is better than an hour exam grade, then your final exam will be counted twice and replace your lowest hour exam grade.

**Grading:** Your final grade is based on a maximum of 1380 points, distributed as follows:

<b>Hour exams (200 points each):</b>	<b>600 points</b>
<b>Final exam:</b>	<b>200 points</b>
<b>Discussion Quizzes (four highest):</b>	<b>120 points</b>
<b>Homework:</b>	<b>120 points</b>
<b>The Experimental Basis of Chemistry</b>	<b>340 points</b>

The assignment of a letter grade (A, B, C, etc.) to a given numerical grade is a somewhat flexible procedure and depends on the overall class performance. Grades, however, will not be fitted to a statistical bell-shaped normal distribution. If the overall class performance is high, it is possible to have a distribution with predominantly A's and B's and relatively few lower grades.

## LECTURE AND HOMEWORK SCHEDULE

DATE	TOPIC	READING	HOMEWORK
Sep 12	Introduction to the Course		
13	Atomic Weights	2.2-2.3	
14	The Nature of Light	7.1	8, 9, 10, 16
15	Discussion, No Quiz		
16	Atomic Spectra, Wave-Particle Duality	7.2-7.3	23, 27, 30, 32
19	Quantum-Mechanical Model	7.4	49, 54, 56, 57
20	Mass Spectrometry	p.52	
21	Many-Electron Atoms	8.1-8.2	9, 10, 11, 14
22	Discussion, Quiz		
23	Periodic Table	8.3	25, 31, 34, 42
26	Atomic Properties	8.4	53, 54, 55, 56
27	Mass Spectrometry (continued)		
28	Chemical Reactivity	8.5	74, 83, 84, 87
29	Discussion, Quiz		
30	<b>HOURLY EXAM I</b> (Covers Sep. 12 - 28)		
Oct 3	Ionic Bonding	9.1-9.2	13, 20, 26, 29
4	X-Ray Crystallography	pp.455-456	
5	Covalent Bonding	9.3	34, 38, 39, 40
6	Discussion, No Quiz		
7	Heats of Reaction, Bond Polarity	9.4-9.5	48, 49, 57, 62
10	Lewis Structures	10.1	9: 66, 67 10: 7, 8
11	X-Ray Crystallography (continued)		
12	Lewis Structures (continued)		16, 17, 21, 22
13	Discussion, Quiz		
14	VSEPR Theory	10.2	34, 37, 38, 39
17	Molecular Polarity	10.3	40, 41, 56, 57
18	X-Ray Crystallography (continued)		
19	Valence Bond Theory	11.1	7, 8, 12, 13
20	Discussion, Quiz		
21	<b>HOURLY EXAM II</b> (Covers Oct. 3 - 19) <b>Last day for Automatic Withdraw</b>		

24	Types of Covalent Bonds	11.2	16, 17, 21, 24
25	Pauling's Electronegativity Scale		
26	Molecular Orbital Theory	11.3	33, 34, 35, 36
27	Discussion, No Quiz		
28	Water as a Solvent	4.1	16, 21, 29, 30
31	Precipitation and Acid-Base Reactions	4.2-4.4	32, 35, 36, 49
Nov 1	Pauling's Electronegativity Scale (continued)		
2	Oxidation-Reduction Reactions	4.5-4.6	67, 70, 71, 76
3	Discussion, Quiz		
4	Balancing Redox Reactions	21.1	4: 95, 96 21: 14, 15
7	Enthalpy	6.1-6.2	10, 17, 21, 25
8	UV Spectroscopy	pp.269-270	
9	Calorimetry	6.3-6.4	35, 36, 50, 51
10	Discussion, Quiz		
11	<b>HOURLY EXAM III</b> (Covers Oct. 24 - Nov. 9)		
14	Hess's Law, Standard Heats of Reaction	6.5-6.6	63, 64, 75, 76
15	UV Spectroscopy (continued)		
16	Entropy	20.1	12, 16, 17, 25
17	Discussion, No Quiz		
18	Free Energy	20.3	
19	<b>FINAL EXAM</b> (Cumulative) Saturday, 7:00 - 8:45 a.m.		