CHEM. 251 Fall-2005  
(ID # 172700, Sect. 001)  
Webpage: http://www.ucs.louisiana.edu/~ssm3124

Instructor: Dr. Salah S. Massoud  
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E-mail: ssm3124@louisiana.edu  
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Lecture: 12:00 – 12:50 pm MWF, in 227 MY  
Office Hours: 10:00 – 11:30 am MWF, 11:00 am – 12:00 pm Th and by appointment.

Required Materials:  
2. Other references are advised from time to time & my lecture notes are also available in some topics.

Prerequisite:  
Chem 108 is pre-requisite to be enrolled in Chem. 251.

Course Coverage*:  
August 22- September 2:  
Chapter 1: Basic Concepts  
Fundamental particles of the atom, quantum theory, wave mechanics, atomic orbitals, many electron atoms, electron configuration, periodic table, Valence bond theory, Molecular orbital theory, octet rule, ionization energies and electron affinities, electronegativity, dipole moments, molecular shape and VSEPR model, geometrical isomerism.

September 5: NO CLASSES (Labor Day)  
September 7-14:  
Chapter 4: Bonding in Polyatomic Molecules  
Bonding in polyatomic molecules, Valence Bond Theory (hybridization), Molecular Orbital Theory

Friday September 16: Hour Exam 1 (Chapters 1 & 4)  

September 19-23:  
Chapter 5: Structures of Metallic and Ionic Solids  
Packing spheres, polymorphism in metals, metallic radii, melting points, bonding in metals, semiconductors, ionic lattices, Born-Haber cycle

September 26-30:  
Chapter 6: Acids, Bases and Ions in Aqueous Solution:  
Properties of water, Brønsted acids and bases, amphoteric oxides and hydroxides, solubility of ionic salts

October 3-10:  
Chapter 7: Reduction and Oxidation  
Definitions, standard reduction potentials, the effect of complex formation on reduction potentials, disproportionation reactions.

October 12:  
Chapter 9: Hydrogen  
Isotopes, ions, hydrogen bonding, binary hydrides

October 14: NO CLASSES (Fall holiday)  

October 17 & 19:  
Chapter 10: Group 1: Alkali Metals  
Occurrence, extraction, physical properties, the metals, halides, oxides, hydroxides, oxoacids

Friday, October 21: Hour Exam 2 (Chapters 5-7, 9 & 10)
October 24 & 26: Chapter 11: Group 2: Alkaline Earth Metals
Occurrence, extraction, physical properties, the metals, halides, oxides, hydroxides, oxoacids

October 28-November 2: Chapter 12: The Group 13 Elements
Occurrence, extraction, uses, physical properties, the elements, halides, oxides, hydroxides, oxoacids, oxoanions, compounds containing nitrogen, electron deficient borane clusters

November 4 & 7: Chapter 13: The Group 14 Elements
Occurrence, extraction, uses, physical properties, the elements, allotropes of carbon, halides, oxides, hydroxides, oxoacids, oxoanions, silicones and sulfides

November 9-16: Chapter 14: The Group 15 Elements
Occurrence, extraction, physical properties, the elements, halides, oxides, hydroxides, oxoacids of nitrogen and phosphorus

November 18 & 21: Chapter 15: The Group 16 Elements
Occurrence, physical properties, the elements, hydrids, halides, oxohalides, oxides, oxoacids

Wednesday, November 23: Hour Exam 3 (Chapters 11-15)

November 25: NO Classes (Thanksgiving)

November 28 & 30: Chapter 16: The Group 17 Elements
The elements, physical properties, hydrogen halides, metal halides, oxides, oxofluorides, oxoacids

December 2: Chapter 17: The Group 18 Elements
Occurrence, physical properties, the elements, compounds of xenon, compounds of Krypton and Radon

December 2: Review

Tuesday, December 6 (1:30-4:00 pm): FINAL EXAM (Comprehensive Exam)

* Dates may change

Examinations:

Friday September 16: Hour Exam 1 (Chapters 1 & 4)
Friday, October 21: Hour Exam 2 (Chapters 5-7, 9 & 10)
Wednesday, November 23: Hour Exam 3 (Chapters 11-15)

Tuesday, December 6 (1:30-4:00 pm): FINAL EXAM (Comprehensive Exam. covering all topics in this course with emphasize on the material from Chapters 17 & 18, attendance at the final is mandatory!)

THERE ARE NO MAKE-UP EXAMINATIONS. If an hour examination (other than the final examination) is missed for any reason, the score on that examination will be the single examination score that is not counted in the final grade. If two or more examinations are missed, it is unlikely that a passing grade will be received in the course, and it is highly recommended that the student withdraw from the course. In the event a student is absent on the day an hour exam is given and the absence is excused (sickness, death in the family) for a verifiable university recognized reason, arrangements must be discussed individually to make-up the exam within TWO days effectively from the day of the test given. The excuse must be given to me in writing and signed by the student. If an absence is unexcused, a zero will be given for the exam missed. Only one test may be made-up this way.
**Test Methods:** Multiple choices, “fill in the blanks”, short essay style, calculations and chemical equation analysis, interpretation: how, why and what questions.

**Grading:**

<table>
<thead>
<tr>
<th>Component</th>
<th>% of course grade</th>
<th>Grade Scale</th>
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</thead>
<tbody>
<tr>
<td>Three Hour Exams*</td>
<td>60%</td>
<td>A: 90-100%</td>
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<td>(ONLY the score of the <strong>better two tests</strong> will be counted; score of the lowest one hour exam will be dropped from your average)</td>
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<td>B: 80-89%</td>
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<tr>
<td>Final Exam</td>
<td>40%</td>
<td>C: 70-79%</td>
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<tr>
<td>(Two one hour exams + final exam)</td>
<td>100%</td>
<td>D: 60-69%</td>
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<td></td>
<td></td>
<td>F: &lt; 60%</td>
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**Complaints:** All grading complaints must be brought to my attention within **Two days** of return of the graded material in order to receive adjustment. These should be placed in writing and submitted on paper.

**Drops:** The last day to drop a class with a grade of “W” is **Friday, November 4, 2005**.

**Attendance:** Students must attend one of the first two class sessions to secure enrollment. Attendance at other lectures is strongly encouraged and it is required only in the days of examinations. Roll is taken and attendance is not required but poor attendance in these courses has usually resulted in low grades. In addition to the assigned reading in the text, the student is responsible for all material presented in lecture. Also, students must be sure that their **cell phones are OFF** before coming to the class.

**Academic Misconduct & Cheating:** Cheating, dishonesty, plagiarism or deception in fulfilling requirements will not be tolerated. Penalties include failing the course and referral to university judiciaries. The penalty of cheating on an examination is a grade of zero on that examination. That score will not be dropped when determining the final grade. Students are expected not share a calculator during an exam. Calculators used on an exam must have only a single display and must display numbers only; no programmable calculators are allowed!! Electronic communication devices such as cell phones and calculators with infrared communication ports are not permitted in the test room during examinations. Their presence will be considered evidence of cheating.

**Problems for Chem 251:** The following problems are recommended from your textbook. However, you should work as many related problems from your text as you can. Some questions deal with general concepts, which you should be able to explain when you have finished the chapter. Other problems are for developing good skills and should be worked as you are reading the chapter. Ideas in these problems are often reworded for discussion questions on exams. These homework problems are assigned for each chapter, but are not collected. They are intended as an aid in studying.

| Chapter 1: | 9, 13, 15-17, 21-30, 34-37 | Chapter 4: | 1, 6, 8, 9, 11, 16, 20 |
| Chapter 5: | 1, 2, 7, 9, 11, 15-17, 19, 23 | Chapter 6: | 1-3, 8, 9, 11-13, 22, 23, 29 |
| Chapter 7: | 2, 3, 5, 6, 7, 11, 15, 19, 24, 26 | Chapter 9: | 1, 9, 11-13, 15, 16 |
| Chapter 10: | 1, 2, 4, 7, 13, 18, 19, 23, 24, 25 | Chapter 11: | 1, 3, 7-10, 13, 15, 16, 18 |
| Chapter 12: | 1-3, 7, 8, 11, 14a, 16 | Chapter 13: | 1, 3, 8, 10, 18, 20 |
| Chapter 14: | 1, 3, 6, 9, 14, 16, 18, 22 | Chapter 15: | 1, 8, 10, 11, 13, 14, 19, 21 |
| Chapter 16: | 1, 8, 11, 13, 16, 21 | Chapter 17: | 1-3, 6, 8-10 |