Chemistry 2351: Inorganic Chemistry I

(Introduction to Inorganic Chemistry)

Course Outline, Winter 2005

Contact Information

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Office Hours: M-F, 10:30 - 11:30, or by appointment

Overview

Inorganic chemistry is generally known as the chemistry of elementsInorganic chemistry is generally known as the chem the chemistry of all the elementsthe chemistry of all the elements and molecules excluding hydrocarbon-based rings and touch on all areas of the periodic table, but will emphasize unifying themes rather than catalogue the elements.

Prerequisite: Chemistry 1101
Note: **Students who have previously received credit for CHEM 3351 cannot take this course for credit**

Course Material (Chapters in Meissler and Tarr in parentheses)

1. Periodic trends (chap. 2)
   atomicatomic structure; the systematicatomic structure; the systematic similarities and differences of adjace down groups
2. Oxidation-reduction chemistry
   balancing redox reactions; use of Frost diagrams to predict spontaneity
3. Ionic Solids (chap. 7)
   packing in atomic solids; close packing and interstitial sites; ionic solids
4. Symmetry (chap. 4)
   VSEPRVSEPR theory and molecular geometries, symmetry and point groups;VSEPR theory and molec spectroscopy
5. Molecular orbital theory (chap. 5)
   homodiatomichomodiatomic molecules;homodiatomic molecules; heterodiatomic molecules; polyatomic m the linear combination of atomic orbitals (LCAO) approximation
6. Coordination chemistry and crystal field theory (chap. 9, 10)
   solvasolvatiosolvation/acidity solvation/acidity of cations, hard/soft concept, introduction to coordination betweenbetween metal *d*-orbitals and ligands; spectrochemi-orbitals and ligands; spectrochemica-orb electronic spectroscopy
7. Main group chemistry
   systematicsystematic variation in the properties and geometries of simple main-group compounds; hsystema ring systems

The **method of evaluation** is as follows:

30%	laboratory ----------->>**Lab Marks:**	6%	Lab 1
30%	final exam	16%	Labs 2-5 reports (3 and 5 are formal)
20%	2 assignments	4%	The lab book itself - data, observations, etc.
20%	midterm	4%	Laboratory technique marks

BOOKS

TheThe text is Miessler and Tarr, Inorganic CInorganic Chemistry, 3rd E Ed. (Pearson: 2004). This book is not *requ* recommendedrecommended if you are going to takerecommended if you are going to take further inorganic courses. There in the library along with the following:

Gary Wulfsberg, Inorganic Chemistry, QD 151.5 W84 2000. Previous text - used copies might be available

D.F. Shriver, P.W. Atkins, C.H. Langford, Inorganic Chemistry, 2nd Edition, QD151.5 S57 1994.

F.A.F.A. Cotton, G.W. Wilkinson, C.A. Murillo, M. Bochmann, Advanced Inorganic Chemistry, 6th Edition, QD 151.2 C8 1999. Very good for metal-based chemistry; the all-time classic inorganic text.

J.E.J.E. Huheey, E.A. Keiter, R.L. Keiter, Inorganic Chemistry: PrinciplesInorganic Chemistry: Principles of StructureIno 151.2 H89 1993

InIn addition, there are a number of olderIn addition, there are a number of older books available in the stacks that youIn ad a 1st edition of Shriver, Atkins, and Langford, earlier editions of Cotton & Wilkinson, and Purcell and Kotz.

Course Calendar:

Week of....	Monday Class	Wednesday Class	Thursday Lab
January 3	New Year s holiday		Check in
January 10			
January 17			
January 24		Assignment 1 due	
January 31			Lab 1 due
February 7			
February 14	S T U D Y B R E A K		
February 21		Midterm exam	
February 28			Lab 2 due
March 7			
March 14			Lab 3 due
March 21		Assignment 2 due	
March 28	Easter Monday (no class)		Lab 4 due
April 4		Make-up class for Easter Lab 5 due Lab book due	