

Chemistry 340/441

Advanced Inorganic Chemistry

Spring 2010

Dr. Richard C. Holz, FH 125, Ext. 87045, E-mail rholz1@luc.edu

Classroom: DH 641; Classtime: MWF 12:35 PM to 1:25 PM

Office Hours: Th 1:00-2:00 PM, FH 125; other times by appointment.

Required Textbooks and Materials:

Housecroft Inorganic Chemistry 3e, 3rd Edition, Catherine Housecroft and Alan G. Sharpe, ISBN-13: 978-0-13-175553-6, Prentice Hall, 2008

Solutions Manual Inorganic Chemistry 3e, 3rd Edition, Catherine Housecroft

ISBN-13: 978-0-13-204849-1, Prentice Hall, 2008

Framework Molecular Model Student Kit, Brumlik, ISBN-13: 978-0-13-330076-5, Prentice Hall.

<u>Lecture #</u>	<u>Date</u>	<u>Topic</u>	<u>Reading</u>
1	1/20	Atomic Structure	Ch. 1
2	1/22	Atomic Structure	Ch. 1
3	1/25	Electronegativity	Ch. 2
4	1/27	Molecular shapes and VSEPR	Ch. 2
5	1/29	Symmetry Elements	Ch. 4
6	02/1	Point Groups	Ch. 4
7	02/3	Introduction to Group Theory	Ch. 4
8	02/5	Applications of Group Theory	Ch. 4
9	02/8	VB and MO models of Diatomics	Ch. 2
10	2/10	MO models of Polyatomics	Ch. 5
11	2/12	MO models of Polyatomics	Ch. 5

Lecture #	Date	Topic	Reading
12	2/15	Review	
13	2/17	EXAM I (Lectures 1 – 11)	
14	2/19	Solid State Structure	Ch. 6
15	2/22	Solid State Structure	Ch. 6
16	2/24	Nanomaterials	Ch. 28
17	2/26	Acids and Bases	Chs. 7 and 9
18	03/1	Isomerism and Properties of Coordination Cpds.	Ch. 20
19	03/3	Crystal Field Theory	Ch. 21
20	03/5	Crystal Field Theory	Ch. 21
21	03/15	M.O. Theory of Coordination Compounds	Ch. 21
22	3/17	Magnetochemistry	Ch. 21
23	3/19	Ligand Field Stabilization Energy	Ch. 21
24	3/22	Review	
25	3/24	EXAM II (Lectures 14 – 23)	
26	3/26	Term Symbols	Ch. 21
27	3/29	Electronic Spectra	Ch. 21
28	3/31	Electronic Spectra	Ch. 21
29	04/7	Substitution Reactions in D_{4h} Complexes	Ch. 26
30	04/9	Substitution Reactions in O_h Complexes	Ch. 26
31	4/12	Electron Transfer Reactions	Ch. 26
32	4/14	The 18-electron rule	Ch. 24
33	4/16	Carbonyl and π -donor complexes	Ch. 24
34	4/19	Organometallic Reactions	Ch. 24
35	4/21	Homo- and Heterogeneous Catalysis	Ch. 27

Lecture #	Date	Topic	Reading
36	4/23	Bioinorganic Chemistry	Ch. 29
37	4/26	Bioinorganic Chemistry	Ch. 29
38	4/28	Bioinorganic Chemistry	Ch. 29
39	4/30	Review	

The final examination will be on F, 5/2, 9:00 - 11:00 a.m., DH641 (60% on Lectures 26-39; 20% on Lectures 1-11, and 20% on Lectures 14-23).

The Tutoring Center offers free small group tutoring and lab (drop-in) tutoring for Loyola students. The groups meet once a week through the end of the semester and are led by a student who has successfully completed study in the course material. To learn more or request tutoring services, visit the Tutoring Center online at www.luc.edu/tutoring.

Academic Integrity: Please refer to the policies on dishonest academic behavior in the Graduate or Undergraduate Studies Catalogs (for details see www.luc.edu/academics/catalog/undergrad/reg_academicgrievance.shtml).

Grading Policy: 100 points for each 50-min exam, 25 points for each of the four 15-min quizzes and 200 points for the final exam for a grand total of 500 points. The exams will be made up of multiple-choice and short-answer questions, whereas only multiple-choice questions will be used for the quizzes. The final exam will be comprehensive with 60% covering material since Exam II and the remaining 40% will test the materials from Exams I and II. No makeup exams will be given. A missed exam or quiz requires written supporting documentation from a physician, funeral director or equivalent, and a score will be established based on the average of the remaining course assignments.

Grades will be assigned as follows: A = 90%, B = 80%, C = 70%, D = 60%.

Learning Objectives: General course learning objectives include:

1. Integrate skills involving scientific methodology.
2. Use evidence to support a claim.
3. Analyze key facts as outlined during the course.
4. Compare and contrast the vocabulary of inorganic chemistry.
5. Ability to analyze chemical and physical properties of inorganic molecules.
6. Be able to distinguish chemical and physical properties of inorganic molecules based on structure and bonding.
7. Relate structure and bonding to function.
8. Provide macroscopic and microscopic descriptions of inorganic reaction mechanisms.
9. Get an A in the course!