

CHEM 2130: Chemistry of the Elements

Instructor: Professor Bruce E. Bowler

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Web Site: <http://blackboard.du.edu/>

Text: Descriptive Inorganic Chemistry, 4th Edition, Geoff Rayner-Canham and Tina Overton, W.H. Freeman and Company, 2006.

Optional text: Student Solutions Manual for Descriptive Inorganic Chemistry, 4th Edition, Geoff Rayner-Canham and Tina Overton, W.H. Freeman and Company, 2006.

Lectures: M, W, F, 9:00-9:50 am in Olin 205.

Help session: Th 9:00-9:50 am in Olin 205.

Office Hours: Monday, 4:30-5:30 pm; Thursday, 5:00-6:00 pm.

Course Guidelines:

Exams: There will be two in-class hour exams worth 200 points and a final exam worth 300 points. Each hour exam will cover the material presented in the 11 lectures preceding the exam. The final exam will be comprehensive. **There are no make-up exams.** If you cannot take an exam at the scheduled time you must make arrangements with Dr. Bowler at least one week in advance to take the hour exam at an alternate time. If a student's performance is better on the final exam than on either of the two hour exams, the final exam grade (adjusted to a 200 point scale) will replace that hour exam grade.

Homework: Problem assignments from the text will be made each week. Answers will be posted on Blackboard the following week. Homework will not be graded, it is meant as a study aid.

Lab Reports: The lab and the lecture are one course. You must attend the lab section you are signed up for each week or you will not receive credit for the lab experiment that week. Each lab will be worth 50 points (pre-lab and lab report combined) toward your overall grade.

Point distribution

Hour Exams: 400 points

Final Exam: 300 points

Lab Reports: 400 points (will be adjusted to count for 25% of your total grade)

Tentative Schedule of Lecture Topics

Date	Day	Topic
3/27/06	M	Chapter 7: Acids and Bases; Bronsted-Lowry Theory
3/29/06	W	Chapter 7: Lewis Theory
3/31/06	F	Chapter 7: Pearson Hard-Soft Acid-Base Concept
4/3/06	M	Chapter 19: Transition Metal Chemistry; Structure and Ligands
4/5/06	W	Chapter 19: Structure and Ligands
4/7/06	F	Chapter 19: Nomenclature and Bonding
4/10/06	M	Chapter 19: Crystal Field Theory
4/12/06	W	Chapter 19: Crystal Field Theory and Spectroscopy
4/14/06	F	Chapter 19: Pearson HSAB and Metal Complexes
4/17/06	M	Chapter 22: Organometallic Chemistry
4/19/06	W	Chapter 22: Organometallic Chemistry
4/21/06	F	Hour Exam I
4/24/06	M	Chapter 22: Organometallic Chemistry
4/26/06	W	Chapter 22: Organometallic Chemistry
4/28/06	F	Chapter 22: Organometallic Chemistry
5/1/06	M	Chapter 4: Metallic Bonds
5/3/06	W	Chapter 4: Metallic Bonds
5/5/06	F	Chapter 5: Ionic Bonds
5/8/06	M	Chapter 5: Ionic Bonds
5/10/06	W	Chapter 6: Inorganic Thermodynamics
5/12/06	F	Chapter 6: Inorganic Thermodynamics
5/15/06	M	Chapter 6: Inorganic Thermodynamics
5/17/06	W	Chapter 8: Oxidation and Reduction
5/19/06	F	Hour Exam II
5/22/06	M	Chapter 8: Oxidation and Reduction
5/24/06	W	Chapter 8: Oxidation and Reduction
5/26/06	F	Chapter 8: Oxidation and Reduction
5/29/06	M	Memorial Day: no class
5/31/06	W	Chapter 20: Properties of Transition Metals
6/2/06	F	Chapter 20: Properties of Transition Metals
6/7/06	W	Final Exam, 8:00-9:45 am, Olin 205

CHEM 2130
Chemistry of the Elements Laboratory
Spring 2006

Instructor: Dr. Bruce Bowler
Mudd 251
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Teaching Assistants: Dan Conners (dconners@du.edu)
Mike Swanson (mswanso2@du.edu)

Lab Manual: Experiments and pre-labs should be downloaded from the class site on Blackboard, <http://blackboard.du.edu/>.

Laboratory Schedule: Laboratory classes begin April 3, 2006 in F. W. Olin 225.

Monday 2:00-5:00 p.m.
Monday 6:00-9:00 p.m.
Tuesday 2:00-5:00 p.m.
Tuesday 6:00-9:00 p.m.

Be prompt to the labs and have all pre-lab requirements completed before coming to lab. **Students who do not turn in a pre-lab to the TA when they arrive will not be permitted to carry out the experiment that week and will receive a zero for the experiment. Students who are more than 5 minutes late to lab also will not be allowed to carry out the experiment.**

You will be expected to keep a bound lab notebook, recording all observations and data. The notebook will be checked and initialed by your teaching assistant at the end of each lab period. **There will no make up labs under any circumstances.**

Lab reports are due on or before the dates indicated below. **Late lab reports will have 10 points deducted for each day they are late.**

The scheduled experiments and due dates for lab reports for the quarter are listed below:

Week of Experiments

4/3 Check in, Inorganic Nomenclature Worksheet. Hand-in at end of lab period.
4/10 Expt. 1: Synthesis of $\text{Al}(\text{acac})_3$. Expt. 1 lab report due week of 4/17.
4/17 Expt. 2: Synthesis of $\text{Co}(\text{acac})_3$. Expt. 2 lab report due week of 4/24.
4/24 Expt. 3: Synthesis of $\text{Co}(\text{acac-NO}_2)_3$. Expt. 3 lab report due week of 5/1.
5/1 Expt. 4: UV-Vis spectroscopy of $\text{M}(\text{acac})_3$. Expt. 4 lab report due week 5/8.
5/8 Expt. 5: IR spectroscopy of $\text{M}(\text{acac})_3$. Expt. 5 lab report due week of 5/15.
5/15 Expt. 6: Gravimetric Analysis of Cobalt in $\text{Co}(\text{acac})_3$. Expt. 6 lab report due week of 5/22.
5/22 Expt. 7: Descriptive Chemistry. Lab check out. Expt. 7 lab report due week of 5/29.