Chemistry 425
Fall 2012

Instructor: Dr. Craig M. Jensen, 309B Bilger Hall
Office hours W, Th 3:00 – 5:00 PM or by appointment.

Text: *Inorganic Chemistry*, Fourth Edition, Gary L. Meisler and Donald A. Tarr

Problem Sets: 10 sets worth10 points each (100 points)

Examinations: Midterm Exam I, September 21 (100 points)
Midterm Exam II, October 22 (100 points)
Final Exam, 9:45 AM, December 10 (200 points)

Date	Lecture Topic(s)	Reading
August		
20	Symmetry	4.1
22	Point Groups	4.2
24	Representation of Groups Theory	4.3.1, 4.3.2
27	Character Tables	4.3.3, 4.4.1
29	Review of Molecular Orbital Theory	5.1-5.2.3, 5.4.1
31	Group Theoretical Treatments of Molecular Orbitals I	5.4.2, 5.4.3
September		
5	Reducing Representations to Irreducible Representations	
7	Group Theoretical Treatments of Molecular Orbitals II	5.4.4, 5.4.5
9	Group Theoretical Treatments of Molecular Orbitals III	8.5.1, 10.3.1,
12	Group Theoretical Treatments of Molecular Orbitals IV	10.3.6
14	Infrared and Raman Spectroscopy	handout
16	Normal Mode Analysis of Molecular Vibrations	4.4.2
19	Characterization of Organometallic and Inorganic Compounds by IR spectroscopy	13.7.1
21	Reivew	
24	Midterm I	

Date	Lecture Topic(s)	Reading
September		
26	Review of Structure of Organometallic Compounds	Chapter 13
28	Ligand Association and Substitution	14.1.1
October		
1	Oxidative Addition	14.1.2
3	Reductive Elimination	14.1.3
5	Migratory Insertion	14.2
8	“ ”	
10	Nucleophilic Attack	14.1.4
12	Hydrogenation	14.3.1, 14.3.5
15	Hydroformylation	14.3.2
17	Olefin Methathesis	14.3.6
19	Review	
22	Midterm II	
24	Special Project	
26	“ ”	
29	“ ”	
31	“ ”	
November		
2	Review	
5	Characterization of Organometallic Compounds by NMR spectroscopy	13.7.2
7	Characterization of Inorganic Compounds by NMR spectroscopy	handout
9	Characterization of Inorganic Compounds by NMR spectroscopy, ^{31}P and ^{11}B NMR	handout
12	Holiday	
14	Magnetic Nonequivalence	handout
16	Multiple Resonance Experiments	handout
19	Second Order Spectra	handout
21	Rate dependent phenomena	handout
23	Holiday	
26	Rate dependent phenomena	handout
28	Relaxation phenomena	handout
30	Relaxation phenomena	handout
December		
3	Solid State NMR	handout
5	Review	