

Chemistry 425
Fall 2016

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

Text: *Inorganic Chemistry*, Fifth Edition, Gary L. Meisler, Paul Fischer and
Donald A. Tarr

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

Examinations: Midterm Exam I, September 16 (100 points)
Midterm Exam II, October 14 (100 points)
Midterm III, November 9 (100 points)
Final Exam, 12 noon, December 12 (200 points)

<u>Date</u>	<u>Lecture Topic(s)</u>	<u>Reading</u>
August		
24	Symmetry, Point Groups	4.1 4.2
26	Transformation Matrices, Representation of Groups	4.3.1, 4.3.2
29	Character Tables	4.3.3
31	Molecular Vibrations	handout
September		
2	Normal Mode Analysis of Molecular Vibrations I	4.4.2
5	Holiday	
7	Normal Mode Analysis of Molecular Vibrations II	4.4.2
9	Infrared Spectroscopy	handout
12	Raman Spectroscopy	handout
14	Review	
16	Midterm I	
19	Discussion of Midterm 1	
21	Molecular Orbital Theory I	5.1
23	Molecular Orbital Theory II	5.2-5.3
26	Molecular Orbitals in Triatomic Molecules	5.4.1
28	Boron Hydrides, 3-center bonding	8.5, 15.4
30	Molecular Orbital Treatment of Group 13 Compounds	8.5

<u>Date</u>	<u>Lecture Topic(s)</u>	<u>Reading</u>
October		
3	Molecular Orbital Treatment of “Hypervalent” Molecules	handout
5	Molecular Orbitals in Extended Systems	handout
7	Group Theoretical Treatment of Molecular Orbitals I	5.4.2
10	Group Theoretical Treatments of Molecular Orbitals II	5.4.6
12	Review	
14	Midterm II	
17	Discussion of Midterm II	
19	Crystal Lattices	7.1.1
21	Ionic Solids, Lattice Energy	7.1.2, 7.2
24	X-ray Diffraction	handout
26	Crystal Systems/Miller Indices	handout
28	Powder X-ray Diffraction	handout
30	Crystal Indexing	handout
November		
2	Single Crystal X-ray Diffraction/ Fourier Analysis	handout
4	Neutron Diffraction	handout
7	Review	
9	Midterm III	
11	Holiday	
14	Discussion of Midterm III	
16	One and Two Dimensional Network Solids	8.6.1
18	Three Dimensional Network Solids	8.6.1, 8.6.2
21	Defects	handout
23	Ionic Conductors	handout
25	Holiday	
28	Metals and Alloys	7.3
30	Band Theory	7.3
December		
2	Semiconductors	7.3
5	Photovoltaics	handout
7	Review	