

**ADVANCED INORGANIC CHEMISTRY  
CHEMISTRY 340 & 441  
SPRING 2012**

Instructor: Dr. Herlinger  
Office: FH-418  
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Hours: MWF 5:00-6:00 PM, other times by appointment only

Required textbook:

“Inorganic Chemistry”, Gary L. Miessler and Donald A. Tarr, 4<sup>th</sup> edition, Prentice Hall, Upper Saddle River, NJ, 2011. ISBN-13: 978-0-13-612866-3.

Class Meetings (40):

Lecture is scheduled 3 meetings per week, MWF, at 3:50-4:40 PM in DU-125 (FH-133).

Course Description:

An advanced inorganic chemistry lecture course that involves the study of atomic structure and bonding, symmetry and group theory, main group chemistry, acid and base theories, and the structure, bonding and electronic spectra of coordination compounds. Selected topics concerning inorganic reaction mechanisms and organometallic chemistry will be presented as time permits.

SCHEDULE OF TOPICS

<u>TOPIC</u>	<u>READING</u>
Introduction to Inorganic Chemistry	Chapter 1
Atomic Structure	Chapter 2
Simple Bond Theory	Chapter 3
Symmetry and Group Theory	Chapter 4
Molecular Orbital Theory	Chapter 5
Acid-Base & Donor-Acceptor Chemistry	Chapter 6
The Crystalline Solid State	Chapter 7
Coordination Chemistry I: Structure	Chapter 9
Coordination Chemistry II: Bonding	Chapter 10
Coordination Chemistry III: Spectra	Chapter 11
Organometallic Chemistry	Chapter 13

## CLASS, EXAMINATION AND BREAK SCHEDULE

1/18	First Class – Wednesday
2/8	Exam I – Wednesday
3/2	Exam II – Friday
3/5-3/9	Spring Break – No Classes
4/4	Exam III – Wednesday
4/6-4/9	Easter Break – No Class
4/27	Last Class – Friday
4/30	Final Exam – Monday – 4:15 – 6:15 PM

### End-of-Chapter Problems for the 4<sup>th</sup> ed.:

Students who are making good progress in the course should be able to solve, independently, most or all of the end-of-chapter problems in the textbook. Exemplary problems are given for each chapter. Students should attempt these problems, but they need not be submitted for grading. Solution for the assigned problems will be posted in the display case on the fourth floor of Flanner Hall across from the elevator.

Chapter 2: 3, 9, 13, 19, 24, 25, 30, 34, 35, 37

Chapter 3: 2, 8, 12, 15, 17, 19, 21, 26, 37, 38

Chapter 4: 2, 5, 13, 11, 14, 20, 21, 22, 25, 31

Chapter 5: 7, 8, 13, 15, 19, 20, 22, 27, 28, 29

Chapter 6: 1, 2, 4, 9, 12, 14, 23, 24, 27, 30, 32

Chapter 7: 3, 5, 7, 11, 12, 13, 15, 16, 17, 18

Chapter 9: 5, 7, 8, 10, 12, 15, 16, 19, 20, 21

Chapter 10: 1, 6, 8, 13, 19, 20, 21, 22, 23, 24, 25

Chapter 11: 6, 7, 10, 11, 12a-d, 15, 17, 20, 25, 29a-c

Chapter 13: 1, 2, 3, 4, 9, 12, 13

### Grading:

Four examinations of equal weight, i.e., 100 points each, will constitute 100% of the course grade. If an hour exam is missed, a proportionate score will be used to determine your numerical score. If a second hour exam is missed, a cumulative final exam will be used to determine your numerical score. The examinations will be given as scheduled above. The final course grade will be determined according to the scale:

<u>Letter Grade</u>	<u>Numerical Score (%)</u>
A	100-86
B	85-71
C	70-56
D	55-41
F	<40

End-of-Chapter Problems for the 3rd ed.:

Chapter 2: 3, 6, 10, 11, 13, 15, 20, 23, 24, 26

Chapter 3: 2, 5, 6, 7, 8, 15, 17, 18, 21, 22

Chapter 4: 2, 5, 8, 10, 11, 14, 15, 16, 19, 23

Chapter 5: 4, 5, 9, 10, 13, 16, 21, 22, 23, 25

Chapter 6: 1, 4, 7, 10, 11, 20, 21, 23, 26, 28

Chapter 7: 3, 4, 8, 9, 10, 11, 13, 14, 16, 17

Chapter 9: 2, 5, 6, 8, 9, 10, 14, 17, 18, 19

Chapter 10: 1, 2, 9, 12, 13, 14, 15, 16, 17, 19, 22

Chapter 11: 3, 4, 7, 8, 9a-d, 12, 14, 17, 22, 27a-c

Chapter 13: 1, 2, 3, 4, 8, 11, 12