



***Inorganic Chemistry (CHEM 4610)***  
***Advanced Inorganic Chemistry (CHEM 4612)***

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***Spring 2007***

**Class time & room** TR 11:00-12:15, TLC 2105

**Textbook** **Housecroft and Sharpe, Inorganic Chemistry, 2<sup>nd</sup> Ed., Pearson/Prentice Hall, 2005**

**Office Hours** MWF 9:30-11:30, TR 16:00-17:00 (Feb22-Mar15 17:00-18:00), F 1:00-3:00. I will be happy to see you at other times by appointment.

### **Objective**

This course covers principles and theories that account for the physical and chemical properties exhibited by the various categories of inorganic compounds (e.g. transition metal and organometallic complexes, bioinorganic systems, inorganic solid materials, and main group compounds) and the periodic behavior of the elements. Thermodynamic, kinetic, and quantum mechanical models will be applied.

### **Learning Outcome**

Each student will demonstrate the ability to: (1) use periodic trends and apply bonding theories to predict structural, chemical, physical, spectroscopic, and magnetic properties of various elements and compounds; (2) apply bonding theories to predict and interpret thermodynamic and kinetic properties of inorganic molecular compounds.

### **Exam Schedule**

Exam #1: February 8 (Thursday)  
Exam #2: March 15 (Thursday)  
Exam #3: April 26 (Thursday)  
Comprehensive ACS Final: May 1 (Thursday) 11am-1pm

### **Evaluation**

Your course grade is computed on the basis of the sum:

<u>CHEM4610</u>		<u>CHEM4612</u>	
In-class Exams	300 pts	In-class Exams	300 pts
Comprehensive Final	100 pts	Comprehensive Final	100 pts
<u>Problem Sets</u>	<u>100 pts</u>	Problem Sets	100 pts
Total	500 pts	<u>Short Reports (incl. presentations)</u>	<u>100 pts</u>
		Total	600 pt

### **Grade**

Determination of your overall grade will be based on your total course points (max. 600 pts).

90 - 100% → A      80 - 89% → B      70 - 79% → C      60 - 69% → D

### **Problem Sets**

Problem sets will be assigned as homework throughout the semester. Some of the problems will be designated for submission and the grade will be counted as your "Problem Sets" points. The penalty for late submission is 10% deduction per day, and submission will not be accepted after the assignments are returned to class. Answer keys will be available in the chemistry main office (TLC 2135).

### **Short reports (CHEM4612 only)**

Several short reports will be assigned to students who are enrolled in Chem4612 (Advanced Inorganic Chemistry). Due dates and instructions will be given at the time of assignment. Students may be asked to give a brief, informal presentation about selected report topic(s) during the class period.

### **Course Topics**

Chapter 19	d-Block chemistry: general considerations
Chapter 20	d-Block chemistry: coordination complexes
Chapter 23	Organometallic compounds of d-block elements
Chapter 26	Homogeneous and heterogeneous catalysis
Chapter 28	The trace metals of life
Chapter 5	Structures and energetics of metallic and ionic solids
Chapter 27	Some aspects of solid state chemistry
Chapter 2	Nuclear Chemistry
Beyond	Nanomaterials

Chapters 21,22, 27 topics (descriptive chemistry of d- and f-block elements) will be covered through short report assignments.