



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

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***Spring 2008***

**Pre-Requisite (4610)** CHEM2422 and PHYS 1112 or 2212

**Pre-Requisite (4612)** CHEM4611 (PHYS2212, CHEM3521 and CHEM3522)

**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** MW 10-11:30, TR 9-10, F 10-11, 1-4. 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 12 (Tuesday)  
Exam #2: March 13 (Thursday)  
Exam #3: April 29 (Tuesday)  
Comprehensive ACS Final: May 6 (Tuesday) 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
Quizzes	50 pts	Quizzes	50 pts
Problem Sets	100 pts	Problem Sets	100 pts
Short report	50 pts	Short report x 4	150 pts
<hr/> Total	<hr/> 600 pts	<hr/> Total	<hr/> 700 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

## Quizzes

Short unannounced quizzes will be given occasionally at the beginning of the class period. No makeup quizzes will be given.

## 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. Other problems are not graded but you are expected to work on all of them. Answer keys will be available in the chemistry main office (TLC 2135).

## Short reports

One (CHEM4610) or four (CHEM4612) short reports (2-3 pages) will be assigned. Topics, due dates and instructions will be given at the time of assignment. The outcome of the reports will be shared in class.

## Attendance

Attendance will be recorded. If you are late for over 10 minutes it is considered absent. If two or more classes are missed in each exam period, no curving points will be given to your exam scores.

## 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
Others	Nanomaterials

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