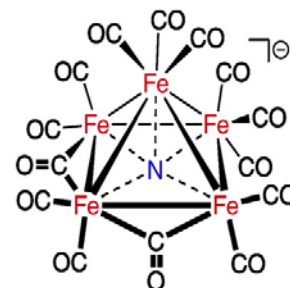




Inorganic Chemistry

CHEM 3400 A

Spring --- 2018



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- ▶ **Lecturer:** Dr. Nick Thomas
 - ▶ **Office:** Room: 310-I, Goodwyn Hall
 - ▶ **Phone:** (334) 244-3327
 - ▶ **E-mail:** nthomas@aum.edu
 - ▶ **Class Days:** Tuesday/Thursday
 - ▶ **Class Times:** Starting 8:00 am (period 1)
 - ▶ **First Class Day:** Mon, January 8, Room 319 Goodwyn Hall

Web site

www.getnickt.com - Here you will find important information about the course (note: instructor does not use Blackboard)

Prerequisites

CHEM 1100/1101, CHEM 1200/1201, CHEM 3100/3101

Co-requisite

CHEM 3401

Course Description

CHEM 3400. Inorganic Chemistry (3). Pr., CHEM 3100, CHEM 3101. A study of modern inorganic chemistry concepts including structure, bonding, periodicity, and classification of the elements and their compounds. Additional topics will be selected from the following areas: group theory, coordination chemistry, crystal field and ligand field theory, methods of structural determination, and bioinorganic chemistry

Text

Inorganic Chemistry, 5rd ed., Gary L. Miesler, Paul J. Fischer, & Donald A. Tarr, Pearson, 2014 (note: the course will not cover all the chapters)

Textbook Chapters

1. *Introduction to Inorganic Chemistry*
2. *Atomic Structure*
3. *Simple Bonding Theory*
4. *Symmetry and Group Theory*
5. *Molecular Orbitals*
6. *Acid-Base and Donor-Acceptor Chemistry*
7. *The Crystalline Solid State*
8. *Chemistry of the Main Groups Elements*
9. *Coordination Chemistry I: Structure and Isomers*
10. *Coordination Chemistry II: Bonding*
11. *Coordination Chemistry III: Electronic Spectra*
12. *Coordination Chemistry IV: Reactions and Mechanisms*
13. *Organometallic Chemistry*
14. *Organometallic Reactions and Catalysis*
15. *Parallels between Main Group and Organometallic Chemistry*

Course Objectives

1. To understand how structure and bonding influence the physical properties and reactivity of inorganic molecules.
2. To learn several theories of bonding, the advantages and disadvantages of each theory and which theory is most useful for each type of inorganic molecule.
3. To be able to recognize symmetry elements in molecules and assign molecules to the appropriate point group in order to explain bonding and spectroscopic properties.
4. To learn how structures are determined for inorganic molecules and to learn about the thermodynamics of crystal lattice formation.
5. To gain an appreciation for how inorganic chemistry influences your everyday life.
6. To learn the properties and reactions of the elements and their compounds.

Registration

All students must be officially registered. Contact the registrar's office if you have any doubts concerning your registration status.

Attendance

Students have an obligation to attend all lectures and to be ON TIME. Lectures will begin promptly at 8:00 am (period 1) on Tuesdays/Thursdays in room 319 Goodwyn Hall. Students are required to sign an attendance roll each day for the first few weeks.

- Note: 1. Unless you have a pending emergency please switch off cellphone ringers in class as they are very distracting to all.**
2. No cell phone or earphones may be used during exams; only non-programmable calculators

Assistance

Office hours will be posted on the instructor's office door and web site. Additional appointments may be made with the instructor. The Instructional Support Lab (203G) can also provide tutoring.

Special Needs

Students who require special attention should contact the AUM Center for Disability Services. *AUM attempts to make reasonable accommodations to meet the special needs of its disabled students.*

Grading

There are 5 exams during the semester. The course grade is based on the average of these exams. The final comprehensive exam can be used as make-up to a missed exam or to replace the lowest of the 5. Material to be tested in each exam is as follows (also material on element talks for each). See timetable for dates:

1st exam	Chapters 1, 9	100 pts
2nd exam	Chapters 2, 3, 10	100 pts
3rd exam	Chapters 6, 7, 11	100 pts
4th exam	Chapters 8, 12	100 pts
5th exam	Chapters 13, 14	100 pts
Final exam	Comprehensive	See above
Essay		25 pts
Talk		25 pts

An exam booklet (blue book) will be needed for each examination. Letter grades for the course will be assigned as follows:

A = 90-100%; B = 80-89%; C = 65-79%; D = 50-64%; F < 50%

Grades for each exam will be posted on the instructor's webpage. On each exam, students must provide a code under which name the grades will be listed. The same code is to be used on all exams (so remember it!). The code may be any letter-single digit number-letter combination (e.g. A3B). Make up your own code, but do not to use the initials of your name. Note: Significant home study is essential for any chemistry course.

Make-up exams: Individual make-up exams will **NOT** be given. If one exam is missed for any reason it will automatically be replaced by the final exam (exception: official university activities, with written permission and advanced notice).

Withdrawal

If you withdraw from this class during the semester, our department requires that you must also withdraw from CHEM 3401.

Academic Dishonesty

Academic Dishonesty (cheating, plagiarism, etc.) in any form will not be tolerated. All infractions will be dealt with according to the policies in the Student Handbook.

Accommodation Statement

It is the policy of AUM to provide appropriate modifications, accommodations or auxiliary aids to any student with a documented disability as defined by Section 504 of the Rehabilitation Act of 1973, as amended, and by the Americans with Disabilities Act (ADA) of 1990. It is the student's responsibility to request accommodations and provide appropriate documentation. Students with disabilities are encouraged to contact the Center for Disability Services (CDS) in Room 101 Taylor Center or call CDS at (334) 244-3631 prior to or upon enrollment at AUM.

Learning Outcomes

Learning Outcomes: After completion of this course, students will be able to analyze:

1. Properties of coordination compounds including nomenclature, bonding, reactions, isomerism, spectral analysis, reactions and mechanisms.
2. Properties of the main group elements
3. Properties and reactions of organometallic compounds.
4. Understanding the solid state
5. Using acid-base and donor-acceptor concepts