

**Instructor**

Prof. Matt Liptak  
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**Lecture**

MWF 12:00 – 12:50, Lafayette L302

**Office Hours**

T 10:00 – 11:00, Cook A116  
F 2:00 – 3:00, Cook A116

**Exams**

T Oct. 4, 7:00 PM, Kalkin 004  
R Nov. 3, 7:00 PM, Kalkin 004  
M Dec. 12, 7:30 AM, Lafayette L302

**Course Description**

Chemistry 231 will cover the fundamentals of inorganic chemistry within the frameworks of molecular symmetry and qualitative molecular orbital theory. All areas of inorganic structure, bonding, and reactivity will be covered, with an emphasis on transition metal complexes.

**Textbook**

Miessler, G.L. and Tarr, D.A. *Inorganic Chemistry*, 5<sup>th</sup> Ed., Prentice Hall, 2013

**Web Content**

Lecture notes, problem sets, and problem set answer keys will be available through Blackboard (bb.uvm.edu). These materials are available for all current, UVM-affiliated, students, but they may not be shared off-campus without permission of the instructor.

**Course Goals**

Upon completion of Chemistry 231, it is anticipated that you will:

1. Understand the relationship between molecular symmetry and bonding.
2. Appreciate the use of qualitative molecular orbital theory as a *general* approach that can explain the chemical properties of inorganic and organic molecules.
3. Recognize why transition metal complexes can have structures and properties unique from those of main group compounds.

**Academic Honesty**

As UVM students, you are expected to conduct yourself in accordance with the Code of Academic Integrity: <http://www.uvm.edu/policies/student/acadintegrity.pdf>

**Accommodations**

All exam accommodations must be requested via e-mail at least two weeks prior to the scheduled exam time in order to receive consideration.

*The instructor reserves the right to change everything, with notice*

## Course Outline

### ***Unit #1 – Fundamentals of Inorganic Chemistry***

- I. Atomic Theory
- II. Molecular Symmetry
- III. Vibrational Spectroscopy
- IV. Main Group Bonding

### ***Unit #2 – Structure and Bonding in Inorganic Systems***

- V. Main Group Reactivity
- VI. Solid State Chemistry
- VII. Transition Metal Bonding
- VIII. Transition Metal Electronic Structure

### ***Unit #3 – Spectra and Reactivity of Inorganic Complexes***

- IX. Electronic Spectroscopy
- X. Transition Metal Reactivity
- XI. Organometallic Reactivity
- XII. Bioinorganic Chemistry

## Problem Sets

Problem sets will be handed out approximately once a week throughout the course of the semester. These problem sets are intended to solidify your understanding of the major course concepts and challenge you to think critically using your new-found knowledge. Please follow a “no writing utensil” rule when discussing these assignments with your classmates. Problem sets are due at the ***beginning*** of class. Late Problem sets will not be accepted, but the two lowest scores will be dropped.

## Exams

Three exams are scheduled for Chemistry 231, which will cover units 1 – 3 separately. In other words, the exams will not be cumulative. Exams #1 and #2 are scheduled for 7 PM on **October 4** and **November 3**. Exam #3 will use our final exam time: **December 12** at 7:30 AM.

## Grading

Your grade will be based upon problem sets (25%) and three exams (25% each). I strive to be as accurate as possible when grading problem sets and exams, but will occasionally make a mistake. You may request a complete regrade of an assignment, plus a clear explanation for any lost points, at any point prior to administration of the final exam.