Instructor

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Lecture

TR 10:00 – 11:15 AM, Angell B203

Office Hours

M 10:00 – 11:00 AM, Cook A116

R 1:00 – 2:00 PM, Cook A116

Course Description

From the course catalogue: "Determination of molecular and electronic structure of inorganic complexes using spectroscopic techniques. Topics include ligand field theory, magnetism, magnetic resonance, Mossbauer spectroscopy, and X-ray crystallography."

Textbook

Que, Lawrence Jr. *Physical Methods in Bioinorganic Chemistry: Spectroscopy and Magnetism*, University Science Books, 2000.

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 236, it is anticipated that you will be able to:

1. Identify appropriate physical characterization tool(s) for an inorganic complex of interest.
2. Describe the sample and instrumentation requirements for these techniques.
3. Analyze spectroscopic data using group theory and/or computational chemistry.
4. Understand physical characterizations of inorganic complexes described in the literature.

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

Course Outline

I. Electronic Absorption Spectroscopy
II. Resonance Raman Spectroscopy
III. Electron Paramagnetic Resonance Spectroscopy
IV. Magnetic Circular Dichroism Spectroscopy
V. Nuclear Magnetic Resonance Spectroscopy
VI. X-ray Absorption Spectroscopy
VII. Mössbauer Spectroscopy

Grading

Your grade will be based upon problem sets (25%), a term paper (25%), a mid-term exam (25%), and a final exam (25%).

Problem Sets

Problem sets will be handed out approximately every other week throughout the course of the semester. Each problem set will have both a written and a computational component. These problem sets are intended to: solidify your understanding of the major course concepts, challenge you to think critically using your new-found knowledge, and gain experience with electronic structure calculations. You are encouraged to work in groups on these problem sets, but please follow a "no writing utensil" rule when discussing these assignments with your classmates. Every member of the course should run their own computations when assigned. Problem sets are due at the ***beginning*** of class. Late Problem sets will not be accepted, but the lowest score will be dropped.

Exams

The exams will ***not*** be cumulative. The mid-term exam is tentatively scheduled for **March 13 at 10:00 AM**. The final exam is scheduled for **May 2 at 10:30 AM**.