

Instructor: Genette I. McGrew

Lectures: Angell B-112
Jan 18–May 02: 11:45am–12:35pm (MWF)

Office hours: 12:50–1:20 (WF)
3:50–4:20 (WTh)
Also by appointment (email me! Office is in Cook A-212)

Primary text: *Inorganic Chemistry*, G. L. Miessler and D. A. Tarr, selected segments
Additional materials will be distributed on Blackboard (bb.uvm.edu) and in class.

Course description:

“Symmetry, group theory, molecular structure; electronic structure of atoms; bonding models including MO, crystal field, and ligand field; solid state, acid-base, and simple organometallic systems.” – Course catalogue.

Chem 131 will cover some of the fundamentals of inorganic chemistry: symmetry, bonding, electronic structure, spectra, and solid state chemistry. Additionally, we will explore organometallic systems, transition-metal mediated catalysis, and bioinorganic systems.

Grades:

Participation in class exercises: Required (15 pts).

Quizzes: Each Quiz is worth 20 pts (120 pts total, ~25%).

Midterm: There is one midterm exam, worth 100 pts (~20%).

Final: The final exam (**7:30am - Friday, May 04, 2012**) is worth 150 pts (~30%) and *will* be cumulative.

Problems: Problem sets are not graded for correctness, but are worth ~15% of the total grade. Unless otherwise specified, paper-based problems are due the following Monday at 11:45am, and BB assignments are due Monday at 11:30am. It is highly recommended that you work through these completely for exam and quiz preparation. Collaboration with your peers is encouraged. However, all students are required to submit their own work.

Paper: If desired, the two lowest Quiz grades may be exchanged for a single grade on a well-written short paper on one Nobel Prize in Chemistry (range: 1951 – 2011) relevant to the topics of Inorganic Chemistry. Additional requirements and grading criteria for the paper will be posted in Feb. If you are planning on writing a paper, your topics are due by April 4.

Pop quizzes: Pop quizzes will be scattered through the semester and are worth 5 pts each. They will consist of 1 or 2 short answer questions.

Extra Credit: There is extra credit, worth up to 10 pts; the opportunity will appear unannounced near the end of the semester.

Online Resources: Reading, problem sets, Q&A, and other course materials will be posted on Blackboard. Please log in to [\[Blackboard\]](#) for more details.

Showing work: When a problem involves reasoning or algebraic manipulations, etc. you *must* show the work you used in arriving at your answer in order to receive credit.

Academic Integrity: As part of the University academic community, students are charged with acting responsibly and honestly, in accordance with the Code of Academic Integrity. Offenses against the Code are a serious matter, and suspected violations will be forwarded to the Center for Student Ethics & Standards for further intervention. [\[Code of Academic Integrity\]](#)

Additional Information:

Prior reading: Inorganic chemistry will rapidly build upon concepts learned in both general chemistry and organic chemistry, so it is highly recommended that you read ahead. Additionally, reviewing your previous texts will be helpful if you are worried about keeping up in this course.

Timeliness: All materials due during this course are to be submitted on time. Hard copies must be placed in the black box inside the door by the beginning of class (11:45 am); items submitted electronically must be received by 11:30 am sharp. Late materials are eligible for *up to* 50% credit if received within 24 hours of the original deadline.

Artistic skills: You are not expected to be a Michelangelo in this class. However, all written materials (i.e. quizzes, etc.) must first be clear and legible in order for grades to be fairly evaluated. If you are worried about this, I highly recommend practicing drawing orbitals, straight lines, printed writing, etc. as necessary.

Personal electronic devices: Please silence and put away all personal electronic devices for the duration of the class. This includes your cell phone and iPod. The exception to this is a laptop/tablet for work relating to class (i.e. note-taking). If you are found using electronics for non-131 purposes (movies, web browsing, etc.), I will ask that the device be put away for the rest of the semester.

There is a clock in the room. Thus, during quizzes and exams, the only permitted instruments on your desk are pen (or pens), scratch paper (provided), and quiz/exam.

Calculators: Calculators will not be used for any exam or quiz.

Why am I filling out a Periodic Table? I will be handing out a blank periodic table... periodically... at the beginning of class for students to write their names on and return. You are encouraged to fill it out as time permits, but you will not be penalized for leaving it blank. The primary function of the periodic table exercise is for me to assess course attendance and interest.

Key dates:	Jan 27 (F)	Quiz 1
	Jan 30 (M)	Add/drop deadline
	Feb 06 (M)	Quiz 2
	Feb 17 (F)	Quiz 3
	Feb 20 (M)	No class (Presidents' Day)
	Mar 02 (F)	Midterm Exam
	Mar 03-11	No class (Spring Break)
	Mar 19 (M)	Quiz 4
	Apr 02 (M)	Withdraw deadline
	Apr 04 (W)	Paper topic due
	Apr 09 (M)	Quiz 5
	Apr 23 (M)	Quiz 6
	Apr 25 (W)	Paper Due
	May 04 (F)	Final Exam

Objectives:

By the end of the course, you will be expected to:

- use appropriate vocabulary and nomenclature.
- be familiar with the periodic table and the trends and properties of the elements contained therein.
- describe inorganic compounds, and both predict and explain the properties and behaviors of inorganic compounds based off of bonding, geometry, point groups, and symmetry.
- be familiar with spectroscopic methods used to determine geometric and electronic structure of inorganic compounds.
- count electrons in transition metal complexes and use the electron count to describe transition metal mediated processes, such as catalytic cycles.
- relate inorganic chemistry to materials science, biochemistry, environmental chemistry, and other current topics in science.

Main topics covered in this course:

- History, atomic structure, and bonding (Ch 1-3)
- Symmetry, group theory, and molecular orbitals (Ch 4-5)
- Acid/base chemistry (Ch 6)
- Coordination chemistry (Ch 9-)
- Organometallic chemistry & catalysis (Ch 13-)
- Solid-state chemistry (Ch 7)
- Bioinorganic chemistry (Ch 16)

*Final note:

If a major change to this syllabus becomes necessary, the updated syllabus will be posted to Blackboard, and an announcement will be made in class and online.

last updated: Feb 17, 2012

*Please contact me if you have any questions.
Best of luck in the upcoming semester!*