

CHEM 441- Inorganic Chemistry  
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**General Remarks:** This course is designed to help students build on the fundamental principles of general and physical chemistry, as related to the area of Inorganic Chemistry. A variety of topics will be covered, inclusive of solution and solid state inorganic chemistry. Trends in the periodic table will be discussed and the student should "FAMILIARIZE" himself/herself with the names, symbols and locations of the elements on the periodic table as soon as possible since periodic tables will not be allowed during examinations or quizzes. Students enrolled in this course are required to have a minimum grade of "C" in all prerequisites (refer to catalog). Courses that are stated prerequisites will not be considered as corequisites to gain admittance into the course.

ALL STUDENTS ENROLLED IN THIS COURSE ARE EXPECTED TO HAVE A WORKING KNOWLEDGE OF GMU'S HONOR CODE POLICY. STUDENTS THAT COMMIT HONOR CODE VIOLATIONS AND/OR HAVE KNOWLEDGE, YET FAIL TO REPORT THE OFFENSE, WILL BE REPORTED TO THE OFFICE OF ACADEMIC INTEGRITY

**Grading:** The final grade in this course will be based on a percentage of points earned relative to total possible points (i.e. 650). Listed below is the point distribution for examinations, quizzes and the final examination. However, an absolute grading scale cannot be determined until all scores have been compiled and evaluated. In order to optimize your overall performance use the following scale as a rule of thumb: 100-90% (A); 89-80% (B); 79-70% (C); <69% (D or F). This course is a prerequisite for CHEM 445 - Inorganic Preps Lab, which means students must earn a grade of C or higher in order to register for CHEM 445 in the following Spring Semester. If you experience extreme difficulties with the course material early on during the semester do not hesitate to contact or JOIN A STUDY GROUP.

The final grade in this course will only be changed in the case of a grading error. Only the instructor of record is authorized to change the grade. Any grading concerns should be discussed directly with the instructor of record.

Final grades will not be adjusted because late homework assignments are finally turned in. Any work submitted on the day of the final exam or afterwards will not be considered in the calculation of the grade.

It is your responsibility to make sure that grades posted in Blackboard accurately reflect the graded material that has been returned to you. Do not wait until the end of the semester to address these matters. Material presented in this manner will not be considered in calculation of the final grade.

Examinations I, II, III (100 pts each)	300 points	46.15%
Quizzes + Homework	150 points	23.08%
Final Exam	200 points	30.77
Total	650 points	100%

**Exam Policy:**

- Hourly exams: Three hourly exams will be given during the semester. All exam scores will be used in determining the final grade. Makeup exams will not be given. Periodic tables will not be allowed during exams and quizzes.
- ALL cell phones and communication devices are to be turned off, properly secured and stored away BEFORE the exams begin. If I find (see or hear) a cell phone on a student during an exam, the student will receive an automatic "F" for the exam, since this is an honor code violation and the matter referred to the Office of Academic Integrity. The recommendation will be for the student to receive a grade of "F" for the entire course. If another student observes the violation or has knowledge of the offense, yet fails to report it, he/she may also be accused of violating the honor code. Students should not place themselves in a position that appears to support collusion in the honor code violation activity. All parties will be referred to the honor committee with sanctions levied based on the number of offenses and judgements determined by the honor committee. Keep in mind at all times that GMU is an Honor Code university.
- Any form of cheating on the final exam will result in an automatic "F" for the course.
- Programmable calculators and electronic media storage devices are not allowed for exams---NO EXCEPTIONS!!!
- Final exam: The final exam will be cumulative, unless otherwise stated.

**Quizzes & Homework:** Quizzes and homework will be given during the semester that vary in point value. The objective of the quizzes is to "encourage" regular and timely review of the material being discussed, rather than waiting until the night before the hourly exam and attempting an all-nighter.

- Suggested homework problems from each chapter will be posted on Blackboard. The suggested problems will not be collected for grading purposes.
- REQUIRED HOMEWORK PROBLEM SETS will be graded. Those will be specified on Blackboard.

Students enrolled in this course must activate their GMU email accounts to receive important University information, including messages related to this class. I will only reply to email received from students that use their GMU email accounts.

If you are a student with a disability and you need academic accommodations, please see the instructor after contacting the Disability Resource Center (DRC) at 703-993-2474. All arrangements for academic accommodations must be initiated through that office.

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The textbook for the course is Inorganic Chemistry, 6th edition, by Duward Shriver; Fraser Armstrong; Tina Overton; Jonathan Rouke; Mark Weller; *textbook subject to change; email instructor for information regarding upcoming fall semester.*

#### Tentative Lecture Schedule

	Chapter	
Week 1	1: Atomic Structure (read as review material)  2: Molecular Structure and Bonding (Lewis structures, Valence bond theory, Molecular Orbital theory, Structure and bond properties)  Review of Trends in the Periodic Table	
Week 2	Monday, September 4  Labor Day holiday; university closed	
Week 2	2: Molecular Structure and Bonding	
Week 3	3: The Structures of Simple Solids (Description of the structures of solids, Structures of metals and alloys, Ionic Solids, Energetics of ionic bonding, Defects and nonstoichiometry, Electronic structures of solids)	
Week 4	3: The Structures of Simple Solids (Description of the structures of solids, Structures of metals and alloys, Ionic Solids, Energetics of ionic bonding, Defects and nonstoichiometry, Electronic structures of solids)	
Week 4/5	6: Molecular Symmetry (Introduction to symmetry analysis and character tables, Applications of symmetry,	

	Symmetries of molecular orbitals, Reducible representations)	
Week 5	6: Molecular Symmetry (Introduction to symmetry analysis and character tables, Applications of symmetry, Symmetries of molecular orbitals, Reducible representations)	
Week 6	7: An Introduction to Coordination Compounds	
Week 7	Columbus Day Recess is Monday,	Tuesday classes & labs do not meet this week.
Week 8	7: An Introduction to Coordination Compounds	
Week 9	8: Physical Techniques in Inorganic Chemistry (Diffraction methods, Absorption and emission spectroscopies, Resonance techniques, Ionization-based techniques, Chemical analysis, Magnetometry and magnetic susceptibility, Electrochemical techniques, Microscopy)	
Week 10	8: Physical Techniques in Inorganic Chemistry  9: Periodic Trends	
Week 11	19: The d-block Elements  22: d-Metal Organometallic Chemistry (Bonding, Ligands, 18-electron rule, Oxidative Addition & Reductive elimination, migratory insertion reactions)	
Week 12	22: d-Metal Organometallic Chemistry (Bonding, Ligands, 18-electron rule, Oxidative Addition & Reductive elimination, migratory insertion reactions)  20: d-Metal Complexes: Electronic Structure and Properties (Electronic structure, Electronic spectra, Magnetism)	
	Thanksgiving Recess	No class
Week 13	20: d-Metal Complexes: Electronic Structure and Properties (Electronic structure, Electronic spectra, Magnetism)	
Week 14	21: Coordination Chemistry: Reactions of Complexes (Ligand substitution reactions, Redox reactions)	