

CHM-360 Inorganic Chemistry
Spring 2023 Syllabus, Department of Chemistry

Professor Rupal Gupta
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Description

- Introduction to atomic structure, bonding and reactivity of inorganic compounds, acid-base behavior, redox potentials, oxidation and reduction in chemical reactions.
- Molecular orbital theory and how it relates in chemistry in materials and biology.
- Physical properties of inorganic compounds and their implications towards real life applications.

Prerequisite: CHM240; Pre- or corequisites: CHM 330 or CHM 336 or CHM 340; Credits: 5

Tentative Schedule

Unit 1 (~2 lectures): Atomic Structure

Unit 2 (~ 2 lectures): Periodic Table and Covalent Bonding

Unit 3 (~ 6 lectures): Bonding and Symmetry

Unit 4 (~5 lectures): Transition metals and crystal field theory

Unit 11 (1 lecture): Bioinorganic Chemistry

Unit 5 (~ 2 lectures): Metallic and Inorganic Bonding

Unit 6 (~ 2 lectures): Acids and Bases

Unit 7 (~ 2 lectures): Oxidation and Reduction

Unit 8 (~ 2 lectures): Trends in periodic table

Unit 9 (1 lecture): Group 1-2 elements

Unit 10 (1 lecture): Group 13-15 elements

Unit 12 (1 lecture): Inorganic Spectroscopy

Grading (100 points)

Paper presentation: 5 points

Midterm 2: 12.5 points

Quizzes: 10 points

Midterm 1: 12.5 points

Lab Grade: 25 points

Final Exam: 35 points

Course hours: Lectures: M, W 12:20-2:15 pm, 6S-229

All course related announcements will be posted on Blackboard.

Office hours: Please email me to schedule an appointment or talk to me after the class.

Text Books

Primary:

Inorganic Chemistry, 7th Edition; Mark Weller, Tina Overton and Jonathan Rourke. ISBN-10: 0198768125

Supplementary:

- Descriptive Inorganic Chemistry, 5th Edition by Geoff Rayner-Cahan and Tina Overton
- *Inorganic Chemistry*, Gary L Miessler, Paul J. Fischer and Donald Tarr, 5th Ed, Pearson – Prentice Hall (2013)

Quizzes and Exams: Tentative Midterm dates: March 6th and April 17th, Final: TBD

Makeup quizzes and exams will NOT be provided. There will be about 10-12 (un)announced quizzes during the semester.

Course Goals and Learning Outcomes. The students will learn about concepts of structure and bonding in inorganic complexes that give rise to their chemical and spectroscopic properties. Students will be able to describe bonding in metal ligand and inorganic complexes, derive the outcomes of chemical reactivity, material and structural properties originating from chemical bonds between metal and other atoms. Students will learn how these properties relate to modern day application of material and inorganic complexes.

Class Policies: Please familiarize yourself with CSI-CUNY policies on academic integrity (see below). ***Cheating and plagiarism will not be tolerated under any circumstances and will result in harsh consequences.***

CUNY policy on academic integrity. Academic dishonesty is prohibited in The City University of New York. Penalties for academic dishonesty include academic sanctions, such as failing or otherwise reduced grades, and/or disciplinary sanctions, including suspension or expulsion. This policy also defines example of academic dishonesty: cheating, plagiarism, obtaining unfair advantage, and falsification of records and official documents. To read the full policy, please visit the following website: https://www.csi.cuny.edu/sites/default/files/pdf/privacy/cuny_academic_integrity.pdf

Reasonable Accommodations and Academic Adjustments

The City University of New York, in compliance with Section 504 of the Federal Rehabilitation Act of 1973 ("Rehabilitation Act"), the Americans with Disabilities Act of 1990 ("ADA"), New York State Executive Law §296, and New York City Human Rights Law, provides qualified individuals with disabilities the opportunity to participate in programs, activities, or employment. For more information and access to the full policy please visit: <https://www.csi.cuny.edu/about-csi/diversity-csi/office-diversity-compliance/reasonable-accommodations-and-academic-adjustments>

Students with Disabilities

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe that you have a disability requiring an accommodation, please contact the Center for Student Accessibility at 718.982.2510/ CSA@csi.cuny.edu. For more information please visit: www.csi.cuny.edu/csa/.

Tutoring and Academic Assistance

The College offers tutoring to students, free of charge. For a complete list of the Tutoring Centers please visit <https://www.csi.cuny.edu/students/academic-assistance/tutoring>