Inorganic Chemistry I, CHEM 210-3 Syllabus
Spring 2023 – M/W/F 10:10-11:05 AM – JSC 309
Prof. Cody C. Webb Jr.
Office Location: JSC 453
Office Hours: Tuesday 1:00-5:00 PM, M/W/F 8:00-10:00 AM
Contact Information: webbc2@hartwick.edu, 607-431-4777

Key Academic Deadlines:

Last Day to Add: Feb. 17, 2023
Last Day to Drop: Apr. 21, 2023
Link to course registration deadlines: https://www.hartwick.edu/academics/student-resources/academic-deadlines-important-dates-2022-2023/

Please talk to your advisor about any changes you are thinking of making to your course schedule, since such changes can affect your progress toward completing your degree, as well as your eligibility for Financial Aid and Athletics. Your advisor can help you make informed decisions in support of your academic success. If you are unsure of who your advisor is, please let me know and I can help you check this.

1. Catalog Description

This course focuses on the chemistry of the elements, including electronic structure, bonding and molecular structure, ionic solids, coordination compounds, the origins of the elements, and the descriptive chemistry of the elements. Topics also include inorganic synthesis, materials science, industrial chemistry, and an introduction to bioinorganic chemistry.

Corequisite: CHEM 210L
Prerequisites: CHEM 108, CHEM 109

2. Learning Outcomes & Assessment

This course will allow students to explore the chemistry of transition metals, lanthanide & actinide metals, and main group metals (s-block & p-block). Inorganic chemistry is currently the driving force for much of the technological and chemical innovation in the 21st century. Some of these developments include: lithium-ion batteries, solar cells, improved MRI contrast agents, metal-containing therapeutic drugs and drug delivery systems, catalysis, hydrogen fuel cells, and advanced computer microchips. This course will discuss these advancements while deepening students understanding of fundamental chemistry and have an overall focus on structural chemistry.

Upon completion of this course, students should be able to: use molecular orbital theory to predict bonding modes and molecular symmetry of coordination complexes; explain properties of inorganic materials based on electronic structure, particularly for d-block and f-block metal complexes; relate reactions between metals and ligands to Lewis acid-base theory; describe inorganic materials based on unit cells; explain the formation of solids by thermodynamics; name coordination compounds, their isomers, and geometries; describe different types of nanomaterials and their applications; explain methods of spectroscopy, electron microscopy, and X-ray diffraction analyses; rationalize the relative reactivities and oxidation states of main group metals (alkali, alkaline earth, heavy p-block); and lastly have an appreciation for inorganic chemistry to solve problems facing modern society.

Students will be assessed through four one-hour exams during the semester and a cumulative final exam. Students will also give an oral presentation on a research report dealing with technically relevant advances in an inorganic chemistry related topic.

3. **Texts and Other Instructional Materials**
    - Descriptive Inorganic Chemistry by Rayner-Canham and Overton, 6th ed. ISBN: 1464125577 (other editions are also acceptable)
    - Scientific or graphing calculator
    - Access to Desire to Learn (D2L) and SciFinder

4. **Attendance and Grading**

Criteria	**Weight**
Attendance & Participation	10%
Exams (x4)	10% (x4 = 40%)
Literature Project: Approved Paper	5%
Literature Project: PowerPoint Draft	5%
Literature Project: PowerPoint Presentation	20%
Cumulative Final Exam	20%

Complete lecture notes will not be posted on D2L and students who miss class are responsible for getting any missed notes from their classmates. The majority of the lecture material will be covered by the textbook; however, some topics will be covered from other sources and the instructor will provide the reading materials. Some of the chapters covered during the semester will involve students working in pairs and completing worksheets that guide them through the material, with assistance from the instructor, before going over the answers. Students will need to bring their textbooks to class on these days and will be reminded ahead of time.

Attendance is mandatory for all lectures and a minimum 24 hours prior notice must be given to the instructor, with appropriate documentation, for absences because of legitimate reasons or sanctioned Hartwick College events. Students who do not miss more than three classes, are routinely prepared, arrive on-time to class, and equally contribute to group work, will receive full credit for their Attendance & Participation grade. In the event of inclement weather, an announcement will be posted on D2L with instructions for students to complete an activity at home.

There will be four, one-hour exams given during the semester. Practice problems from the textbook will be periodically assigned as homework, but will not be graded. Doing these practice problems is necessary to be successful on exams. The cumulative final exam will be given during exam week on May 15 from 12:00-3:00 PM. It is possible to replace your lowest semester exam grade with the final exam grade if you score higher.

The literature project will involve selecting a peer-reviewed journal article on an inorganic chemistry related topic and giving an oral presentation on their paper. More information on this will be provided later in the semester. There are two hard deadlines during the semester related to this project: an approved research paper and a first draft of your PowerPoint. In order to receive full credit for each benchmark, you must complete all requirements as outlined by the instructor. The final presentations will be conducted during the last week of classes.

Tentative Grade Scale

94%-100%	A	73%-76%	C
90%-93%	A-	70%-72%	C-
87%-89%	B+	67%-69%	D+
83%-86%	B	63%-66%	D
80%-82%	B-	60%-62%	D-
77%-79%	C+	Below 60%	F

5. Course Schedule

Week of	Chapter	Topic
2/6/23	1	Syllabus, Atomic Structure
2/13/23	1, 2	Atomic Structure, Periodic Trends
2/20/23	3	MO Theory, Exam 1
2/27/23	3, 4	Symmetry, Solid State Chemistry
3/6/23	4, 5	Solid State Chemistry
3/13/23	5, 6	Solid State Chemistry, Exam 2
3/20/23		Spring Break
3/27/23	6	Thermodynamics
4/3/23	19	Nomenclature
4/10/23	19	Coordination Chemistry
4/17/23	19	Coordination Chemistry, Exam 3
4/24/23		Methods of Analysis
5/1/23	23	Organometallics, No Class Friday
5/8/23		Nanomaterials, Exam 4
5/15/23		Final Exam at noon

6. Academic Accommodations

Hartwick College is committed to upholding and maintaining all aspects of the Federal Americans with Disabilities Act of 1990 (ADA) and Section 504 of the Rehabilitation Act of 1973. If a student with a disability wishes to request academic accommodations, they should contact Lara Sanford, Director of AccessAbility Services, at sanfordl@hartwick.edu , or AccessAbilityServices@hartwick.edu. AccessAbility Services is located on the 5th floor of Yager Library in the Center for Student Success. Any information regarding a student's disability will remain confidential. Requests for academic adjustments should be made as early as possible.

7. Academic Honesty

Students are expected to complete and submit their own work. For further information please read Hartwick's Academic Honesty policy: https://www.hartwick.edu/academics/student-services/academic-affairs/academic-policies/.

8. Title IX

Hartwick College is committed to equal opportunity and providing a safe community free from all forms of sexual misconduct including sexual/gender-based harassment, discrimination, dating or domestic violence, stalking, sexual exploitation, and sexual assault. If you wish to make an official report to the College or have questions about the College's policy and procedures regarding sexual misconduct, please contact the Title IX Coordinator, Michael Arno, at arnom@hartwick.edu or (607) 431-4293. Online reporting and policy information is available at https://www.hartwick.edu/about-us/employment/human-resources/title-ix/.
If you wish to speak confidentially about an incident of sexual misconduct, please contact one of the following resources: Perrella Wellness Center, Health - (607) 431-4120, or Counseling – (607) 431-4120; or Opportunities for Otsego's Violence Intervention Program – (607) 432-4855.

All other employees, including faculty, are responsible employees at Hartwick College and are required to report any incident of sexual misconduct that is personally reported to them to the Title IX Coordinator so that support and resources can be provided for all parties.

9. COVID-19

Any COVID-19 updates will be provided on the College website (https://www.hartwick.edu/about-us/covid-19-updates/). Instructors will communicate with students about any specific adjustments that are being made to their courses, such as modality of instruction, expectations for participation, and any changes to assigned work; students should check their Hartwick email accounts frequently for information from their instructors.

10. Campus Mental Health Support Services

As a student you may experience a range of issues that can cause barriers to learning. These might include strained relationships, anxiety, stress, alcohol/drug problems, feeling down, or loss of motivation. The Counseling Center is available to help with these issues and may be reached by calling (607) 431-4420 or emailing counselingcenter@hartwick.edu. Counseling services are **free of charge** and confidential. Fifty-Fifty, a peer counseling service, is also available if you are more comfortable talking with a fellow student who has been trained to offer information and support in a safe, non-judgmental atmosphere. To reach Fifty-Fifty, call (607) 431-5050 or email fiftyfifty@hartwick.edu.