Inorganic Chemistry - CH 412 A

School of Engineering and Science
Spring 2023

Meeting Times:	Thursday 11:00 AM to 1:50 PM
Classroom Location:	Martha Bayard Stevens Hall 107
Instructor:	Dr. Sunil Paliwal
Contact Info:	McLean Room 205, spaliwal@stevens.edu, 201-216-8211
Office Hours:	Wednesday 5:00 PM to 6:00 PM or by appointment
Course Web Address:	https://sit.instructure.com/courses/64179
Prerequisite(s):	
Corequisite(s):	CH-412-LA
Cross-listed with:	

COURSE DESCRIPTION

This lecture course is one-semester introduction to the field of inorganic chemistry. This course, will provide knowledge of the periodic table of inorganic chemistry, inorganic reaction mechanisms, structures, ligand field theory, group theory, organometallic chemistry and bioinorganic chemistry.

LEARNING OBJECTIVES

After successful completion of this course, students will be able to…

- Describe trends in periodic table.
- Understand inorganic reaction mechanisms.
- Understand ligand field theory and group theory.
- Understand organometallic and bioinorganic chemistry.

FORMAT AND STRUCTURE

This course consists of one lecture per week.

COURSE MATERIALS

Textbook(s): F. Albert Cotton, Geoffrey Wlkinson, Paul L. Gaus, “Basic Inorganic Chemistry", 3rd edition,

ISBN: 978-0-471-50532-7

Other Readings: Gary L. Miessler, Paul J. Fischer, and Donald A. Tarr. “Inorganic Chemistry”, 5th edition.

ISBN-13: 978-0-321-81105-9

In addition, handouts provided in the class or at canvas.

COURSE REQUIREMENTS

Attendance Attendance will be taken at the start of the lecture.

Homework Assignment There will be homework assignments throughout this course. All homework assignments must be submitted by the assigned date. Late assignments will not be accepted and will not be given any points. Total homework assignments grade will be worth 5% of the final grade.

In-Class activity There will be assignments given in the class for nearly each lecture. These assignments must be completed in the class. There will be no make-up for in-class activity. Total in-class assignments grade will be worth 20% of the final grade.

Exams Total three exams will be given in this course. The final exam is cumulative. Exam dates are listed in the tentative course schedule below.

Presentation Each student will give an oral presentation based on the assigned topic. Presentation will be worth 10% of the final grade.

Make-up Policy Make-up is only available with a school official's written permission. Make-up work must be completed within a week from the day excused.

GRADING PROCEDURES

Grades will be based on:

Exam I	(20%)
Exam II	(20%)
Final	(25%)
In-Class activity	(20%)
Homework Assignment	(5%)
Presentation	(10%)

PROVOST POLICY AS OF 3/22. Effective immediately, all undergraduate students at Stevens will be permitted to convert any course used towards undergraduate requirements to pass/fail grading for the Spring 2020 semester.
All courses for which undergraduate students receive passing (P) grades will count toward degree requirements. Note that this overrides some departmental or school/college policies. At the end of the semester, all faculty will submit their course grades (A-F) online to the Registrar's Office per the Stevens Grading Policy. At this time, **students will have seven (7) days after the date on which final grades are posted to choose to move courses to pass/fail grading.**

ACADEMIC INTEGRITY

Undergraduate Honor System

Enrollment into the undergraduate class of Stevens Institute of Technology signifies a student's commitment to the Honor System. Accordingly, the provisions of the Stevens Honor System apply to all undergraduate students in coursework and Honor Board proceedings. It is the responsibility of each student to become acquainted with and to uphold the ideals set forth in the Honor System Constitution.

More information about the Honor System including the constitution, bylaws, investigative procedures, and the penalty matrix can be found online at http://web.stevens.edu/honor/

The following pledge shall be written in full and signed by every student on all submitted work (including, but not limited to, homework, projects, lab reports, code, quizzes and exams) that is assigned by the course instructor. No work shall be graded unless the pledge is written in full and signed.

"*I pledge my honor that I have abided by the Stevens Honor System*."

Reporting Honor System Violations
Students who believe a violation of the Honor System has been committed should report it within ten business days of the suspected violation. Students have the option to remain anonymous and can report violations online at www.stevens.edu/honor.

Graduate Student Code of Academic Integrity

All Stevens graduate students promise to be fully truthful and avoid dishonesty, fraud, misrepresentation, and deceit of any type in relation to their academic work. A student's submission of work for academic credit indicates that the work is the student's own. All outside assistance must be acknowledged. Any student who violates this code or who knowingly assists another student in violating this code shall be subject to discipline.

All graduate students are bound to the Graduate Student Code of Academic Integrity by enrollment in graduate coursework at Stevens. It is the responsibility of each graduate student to understand and adhere to the Graduate Student Code of Academic Integrity. More information including types of violations, the process for handling perceived violations, and types of sanctions can be found at www.stevens.edu/provost/graduate-academics.

EXAM ROOM CONDITIONS

The following procedures apply to quizzes and exams for this course. As the instructor, I reserve the right to modify any conditions set forth below by printing revised Exam Room Conditions on the quiz or exam.

1. Students may use the following devices during quizzes and/or exams. Any electronic devices that are not mentioned in the list below are not permitted.

Device	**Permitted?**	
	Yes	No
Laptops		X
Cell Phones		X
Tablets		X
Smart Watches		X
Google Glass		X
Other (Nonprogrammable calculator)	X	

2. Students may use the following materials during exams. Any materials that are not mentioned in the list below are not permitted.

Material	Permitted ?	
	Yes	No
Handwritten Notes		X
Typed Notes *Conditions*: one 8x10 sheet (front and back) is permitted		X
Textbooks		X
Readings		X

3. Students are/are not allowed to work with or talk to other students during exams.

LEARNING ACCOMODATIONS

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Disability Services Confidentiality Policy

Student Disability Files are kept separate from academic files and are stored in a secure location within the office of Student Counseling, Psychological & Disability Services. The Family Educational Rights Privacy Act (FERPA, 20 U.S.C. 1232g; 34CFR, Part 99) regulates disclosure of disability documentation and records maintained by Stevens Disability Services. According to this act, prior written consent by the student is required before our Disability Services office may release disability documentation or records to anyone. An exception is made in unusual circumstances, such as the case of health and safety emergencies.

For more information about Disability Services and the process to receive accommodations, visit https://www.stevens.edu/sit/counseling/disability-services. If you have any questions please contact: Lauren Poleyeff, Psy.M., LCSW - Disability Services Coordinator and Staff Clinician in Student Counseling and Disability Services at Stevens Institute of Technology at lpoleyef@stevens.edu or by phone (201) 216-8728.

INCLUSIVITY STATEMENT

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- be open to the perspectives of others
- appreciate the uniqueness their colleagues
- take advantage of the opportunity to learn from each other
- exchange experiences, values and beliefs
- communicate in a respectful manner
- be aware of individuals who are marginalized and involve them
- keep confidential discussions private

TENTATIVE COURSE SCHEDULE (CH 412 A)

The following is a tentative course schedule. Any and all changes to this schedule will be communicated to you 1) in class and 2) via email. The Canvas shell for this course will always be kept up-to-date so you can always reference the "Assignments" tab for accurate due dates.

Date	Chapters: Topics	Readings
January 19	Introduction , Syllabus Atomic Structure	Chapter 2
January 26	Molecular bonding	Chapter 3
February 02	Symmetry and Group theory	Handout
February 09	Molecular orbitals	Chapter 3
February 16	**Exam I**	
February 23	Solvents, acid and bases	Chapter 7
March 02	Chemistry of the main group elements	Selected topics from Chapter (9-22)
March 09	Coordination chemistry	Chapter 6 and handout
March 16	*No Class (Spring break)*	
March 23	Coordination chemistry continues	Chapter 6 and handout
March 30	**Exam II**	
April 06	Organometallic chemistry	Chapter 29
April 13	Transition Elements	Selected topics from Chapter 23-27
April 20	Bioinorganic chemistry ***Presentation***	Chapters 31
April 27	Final Exam Review ***Presentation***	
TBA	**Final Exam**	Cumulative

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TA:	Thompson Hui, thui@stevens.edu, and Praxita Hirjibhai Ramani, pramani@stevens.edu
Office Hours:	Friday 10:00 AM to 11:00 AM
Course Web Address:	`https://sit.instructure.com/courses/64915`
Prerequisite(s):	
Corequisite(s):	CH-412
Cross-listed with:	

COURSE DESCRIPTION

This lab course is one-semester introduction to the field of inorganic chemistry. This course will provide knowledge and hands-on experience of experiments related to reaction mechanisms, structures, coordination chemistry, ligand exchange, organometallic chemistry and bioinorganic chemistry.

LEARNING OBJECTIVES

After successful completion of this course, students will be able to…

- Perform inorganic reactions.
- Perform experiments involving ligand exchange.
- Perform organometallic reactions
- Understand reactivity of inorganic compounds.
- Perform separation of ions from mixture

FORMAT AND STRUCTURE

This course consists of one lab per week.

COURSE MATERIALS

Handouts provided in the class or at canvas.

COURSE REQUIREMENTS

Attendance Attendance will be taken at the start of the lab. A student will lose 50 points (0 points for prelab, quiz, lab performance and lab report each) for each absence. The grades for excused absences (religious or medical, noted in via email to the professor prior to the absence occurring) accompanied by proper documentation will be determined by the average of the other lab performance and lab reports.

Prelab Write-up A pre-laboratory protocol must be completed and submitted before the laboratory session (use Lab Report template for write-up). A paper copy must be brought to the lab. This will be checked by the instructor before student enters or begins the experiment. It must include information such as date, title, purpose, balanced equation, reagents table, calculation, safety information and bullet point summary of the lab procedure in your own words including diagram of any special apparatus to be used in the lab.

Quizzes There will be quizzes throughout the semester. Quizzes will be graded for accuracy and returned within 2 class periods. If a student is absent (unexcused) on a day that a quiz is given s/he will receive an automatic 0 for that quiz.

Lab Performance During each experiment, the lab instructor will assess each student's performance in the lab, and assign 0 to 10 points for appropriate laboratory behavior and technique. Lab performance points are AWARDED for: demonstrating familiarity with the experimental procedure, demonstrating proper experimental technique, keeping personal lab bench and communal areas clean, properly (and carefully) disposing of waste, interacting appropriately with fellow students and the teaching assistant, and adhering to safety regulations.

Postlab Report The postlab reports must be completed using a template that will be provided in the class. Lab reports are generally due a week after conducting the lab unless directed otherwise. After the due date the lab reports will not be accepted and 0 points will be assigned. You are required to submit your lab report to Turnitin to be screened for plagiarism. Failure to submit lab report at Turnitin will result in 0 points for the report.

Exams There will be one final exam. The final exam is cumulative. Final exam may be written exams or a combination of written exams and a lab experiment.

Make-up Policy There is no make-up of the lab.

GRADING PROCEDURES

Grades will be based on:

Prelab Report	(10%)
Postlab Report	(20%)
Quiz	(10%)
Lab Performance	(10%)
Final Exam	(50%)

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January 20	No class	
January 27	No class	
February 03	Syllabus, safety	Handout
February 10	Exp 1	Handout
February 17	Exp 2	Handout
February 24	Exp 3	Handout
March 03	Exp 4	Handout
March 10	No class	
March 17	***No Class (Spring break)***	Handout
March 24	Exp 5	Handout
March 31	Exp 6	Handout
April 07	No class, holiday	Handout
April 14	Exp 7	
April 21	**Final Exam**	**Cumulative**