

Syllabus

Day/Time: Mon. and Wed. 10:00-11:20am

Location: Smith 240

Attendance: *Mandatory*

Instructor: Prof. Jenny Lockard

Office: 301E LSC

e-mail: jlockard@newark.rutgers.edu

Office hours: M & W 11:30am - 12:30pm

Text: "Inorganic Chemistry", 4th ed. by Housecroft and Sharpe (Required)

"Solution Manual for Inorganic Chemistry" by Housecroft and Sharpe (Optional)

Grading: Quizzes: 10%
Midterm exam: 30%
Final exam: 60%

Prerequisites: General Chemistry (2 semesters), 21-160-114,116 (Required)

Organic Chemistry (2 semesters), 21-160-335,336 (Recommended)

Course Description:

This course will focus on a range of topics in inorganic chemistry. The first part of the semester will start by covering basic concepts of atoms and molecules (review from general chemistry) and will introduce new concepts on Molecular symmetry, simple group theory and molecular orbital theory (starting with diatomics and building to polyatomic molecules). The second part of the course will cover experimental techniques important in the analysis of inorganic compounds along with basic concepts of metallic and ionic solids, inorganic acids/bases, and reduction/oxidation reactions. The material in this course will serve as a prerequisite for both Inorganic II and Physical Chemistry I.

Course goals:

- Master fundamental concepts of group theory and molecular symmetry including symmetry elements and operations, point groups and character tables
- Master fundamental concepts of molecular orbital theory including predictions of σ and π bonds, bonding and antibonding orbitals, and relative MO energy levels
- Gain a working knowledge of experimental analysis techniques and corresponding data analysis
- Understand concepts related to inorganic solids, acid base chemistry and basic redox reactions.

Course Schedule: Lecture topics / Book Chapter sections (Housecroft & Sharpe):

Lecture Topic	Chapter sections	Schedule (tentative)
Basic concepts: atoms	1.1 - 1.10	9/7, 9/12
Basic concepts: molecules	2.1,2.4 - 2.6,2.8,2.9	9/14, 9/19
Introduction to Molecular symmetry	3.1 - 3.8	9/21, 9/26, 9/28,10/3
Bonding: MO theory (diatomics, polyatomics)	2.3, 2.7, 5.1 - 5.7	10/5, 10/10, 10/12, 10/17
Midterm Review		10/19
Midterm Exam		10/24
Experimental Techniques in Inorganic Chemistry	4.6 - 4.12	10/26, 10/31, 11/2, 11/7
Structures of Metallic and Ionic Solids	6.1 - 6.17	11/9, 11/14, 11/16
Acids and Bases	7.1-7.9	11/21, 11/28
Reduction and Oxidation	8.1 - 8.5	11/30, 12/5, 12/7
Final Review		12/12, 12/14
Final Exam (Cumulative)		12/19 11:45am – 2:25pm

Academic Integrity

As an academic community dedicated to the creation, dissemination, and application of knowledge, Rutgers University is committed to fostering an intellectual and ethical environment based on the principles of academic integrity. Academic integrity is essential to the success of the University's educational and research missions, and violations of academic integrity constitute serious offenses against the entire academic community. The entire Academic Integrity Policy can be found here:

<http://academicintegrity.rutgers.edu/academic-integrity-policy/>

Your health and well-being matter, and Rutgers has put in place a number of resources that are intended to help students through the challenges that might emerge during these times. Information on many of these resources appears below. Please let us know immediately if you are experiencing circumstances that are negatively impacting your academic performance. We also strongly encourage you to contact your academic advisor.

Accommodation and Support

Rutgers University Newark (RU-N) is committed to the creation of an inclusive and safe learning environment for all students. RU-N has identified the following resources to further the mission of access and support:

- *Absences:* All students are responsible for timely notification of their instructor regarding any expected absences. The Division of Student Affairs can provide assistance for absences related to

religious observance, emergency or unavoidable conflict (illness, personal or family emergency, etc.) Students should refer to the University's Course Attendance policy (10.2.7), for complete expectations and responsibilities. The office can be contacted at: (973) 353-5063 or deanofstudents@newark.rutgers.edu.

- *Disabilities:* The Office of Disability Services (ODS) is responsible for the determination of appropriate accommodations for students who encounter barriers due to disability. Once a student has completed the ODS process (registration, initial appointment, and submitted documentation) and reasonable accommodations are determined to be necessary and appropriate, a Letter of Accommodation (LOA) will be provided. The LOA must be given to each course instructor by the student and follow up with a discussion. This should be completed as early in the semester as possible as accommodations are not retroactive. More information can be found at ods.rutgers.edu. Contact ODS: (973) 353-5375 or ods@newark.rutgers.edu.
- *Temporary Conditions/Injuries:* The Division of Student Affairs can assist students who are experiencing a temporary condition of injury (broken or sprained limbs, concussions, or recovery from surgery). Students experiencing a temporary condition or injury should submit a request for assistance at: <https://temporaryconditions.rutgers.edu>.
- *Pregnancy:* The Office of Title IX and ADA Compliance is available to assist students with any concerns or potential accommodations related to pregnancy. Students may contact the office at (973) 353-1906 or TitleIX@newark.rutgers.edu.
- *Gender or Sex-Based Discrimination or Harassment:* The Office of Title IX and ADA Compliance can assist students experiencing any form of gender or sex-based discrimination or harassment, including sexual assault, sexual harassment, relationship violence, or stalking. Students can reports an incident to the office at: (973) 353-1906 or TitleIX@newark.rutgers.edu. Incidents may also be reported by using the following link: tinyurl.com/RUNReportingForm. For more information, students should refer to the University's Student Policy Prohibiting Sexual Harassment, Sexual Violence, Relationship Violence, Stalking and Related Misconduct located at: <http://compliance.rutgers.edu/title-ix/about-title-ix/title-ix-policies/>.
- *Interpersonal Violence:* The Office for Violence Prevention and Victim Assistance can provide any student with confidential support. The office is a **confidential resource** and does **not** have a reporting obligation to report information to the University's Title IX Coordinator. Students can contact the office at: (973) 353-1918 or run.vpva@rutgers.edu. There is also a confidential, text-based line students can text for support: (973) 339-0734.
- *Crisis and Concerns:* The Campus Awareness Response and Education (CARE) Team works with students in crisis to develop a support plan to address personal situations that might impact academic performance. Students may contact the CARE Team at: <http://tinyurl.com/RUNCARE> or careteam@rutgers.edu.
- *Stress, Worry, or Concerns about Well-Being:* The Counseling Center has confidential therapists available to support students. To schedule an appointment: counseling@newark.rutgers.edu or (973) 353-5805. If a student is not quite ready to make an appointment with a therapist but is

interested in self-help, check out *TAO at Rutgers-Newark* for an easy, web-based approach to self-care and support: <https://tinyurl.com/RUN-TAO>.

- *Emergencies*: Call 911 or contact Rutgers University Police Department (RUPD) at (973) 353-5111.

Learning Resources:

- *Rutgers Learning Center (tutoring services)*
(973) 353-5608
<https://sasn.rutgers.edu/student-support/tutoring-academic-support/learning-center>
- *Writing Center (tutoring and writing workshops)*
(973) 353-5847
nwc@rutgers.edu
<https://sasn.rutgers.edu/student-support/tutoring-academic-support/writing-center>