

Syllabus
Inorganic Chemistry
Chem 371
Fall 2021
Section 01
Mon/Thursday: 11:00 AM-12:20 PM
Remote classes by Zoom

Professor Martha Greenblatt

Office: Wright Rieman 134A

Office Hours: M 12:00-1:00 PM and by appointment (preferable)

Phone: 732-343-4144

E-mail: greenbla@chem.rutgers.edu (best way to contact me)

Text: "Inorganic Chemistry", Weller, Overton, Rourke, Armstrong, Freeman 7th Edition (2018)

Solution Book: "*Solution Manual for Inorganic Chemistry*" accompanying 7th Edition

URL: <http://www.whfreeman.com/ichem7e>

References: "*Inorganic Chemistry. C. E. Housecroft and A. G. Sharpe. Pearson, any edition.*"

Prerequisites: Chem 161 or equivalent

Lecture Presentations: Remotely, via zoom,

Exams: Exams I, II and Final Exam remotely.

Grading: A total of 400 points is possible in Chem 371. Points are distributed as follows:

Exam I, Monday, October 4, 2021

Exam II, Monday, November 1, 2021

Last day of classes, Monday, December 13, 2021

Comprehensive Final Exam: Thursday, December 16, 8:00-11:00 AM.

Course Objectives/ Goals:

Chemistry 371 is designed to take students from the introductory principles of chemistry to a broader and deeper level of understanding of the chemistry across the periodic table. The material this semester is built on the electronic structure of atoms, periodic behavior of the elements and bonding theories learned in Chemistry 361. This semester we begin with an in depth review of acids and bases and redox reactions. The subject of chemical bonding is paramount

throughout the course. Especially important is the understanding of molecular orbital (delocalized) bonding models. Other important topics are coordination complexes of transition metals, organometallics chemistry, and modern concepts of solid-state chemistry.

Class Attendance:

I record attendance for each class, and class attendance is taken into consideration in the decision of the final grade.

Web site 160:371

I will be utilizing the RU-CANVAS website for Chem 371. All registered students will have access to the course site of 371 with the following process:

1. Using a web browser from any location go to: www.canvas.rutgers.edu
2. Log In with your RU NetID and Password
3. Click on Inorganic Chemistry-160:371- Fall 2021
4. **Files** will allow you to access documents I upload there: Syllabus, Lecture Notes etc...

Supplemental materials for the class (e.g. power point files, notes, overheads, sample exams, and other materials) will be available through the Web site. **I recommend that you download and print files before lecture and use them to take notes in class.**

The material on this web page is copyrighted and may not be posted on any other web site at or outside of Rutgers without permission.

Noncompliance with this policy will be treated as a violation of the Code of Student Conduct and will be referred to the Office of Student Conduct for action.

http://academicintegrity.rutgers.edu/files/documents/AI_Policy_9_01_2011.pdf

Important Dates (tentative):

Exam I, Monday, October 4, 2021; Room to be announced
Exam II, Monday, November 1, 2021; Room to be announced
Last day of classes, Monday, December 13, 2021
Final Exam, Thursday, December 16, 8:00-11:00 AM.

Missed Exam Policy: I do not give Make-up Exams for any missed reasons.

If a student misses, or will miss an exam, due to illness or family emergency, he/she should speak to their Dean as soon as possible. Absence from an Exam must be supported by appropriate documentation (e.g., note from physician).

Withdrawal Policy and "I" Grade Policy: The administration of Chem 371 will adhere strictly to the academic regulations stipulated in the most recent Schedule of Classes and the RU General Catalog. Withdrawal from the course will follow official RU procedures. Students are required to complete all courses for which they are registered by the end of the semester. In some cases, a student may be unable to complete all of the coursework because of extenuating circumstances, but not due to poor performance. The term 'extenuating' circumstances include: (1) incapacitating illness which prevents a student from attending classes for a minimum period of two weeks, (2) a death in the immediate family, (3) financial responsibilities requiring a student to alter a work schedule to secure employment, (4) change in work schedule as required by an employer, or (5) other emergencies deemed appropriate by the instructor.

Plagiarism: Plagiarism includes knowingly "representing, by paraphrase or direct quotation, the published or unpublished work of another person as one's own in any academic exercise or activity without full and clear acknowledgment. It also includes the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials." The penalties for plagiarism are severe.

Students with Disabilities: The Americans with Disabilities Act mandates that reasonable accommodation will be made for students with disabilities in order to assure equal participation in Chem 371.

Tentative Class Schedule Fall Semester 2021

Day	Date	Lecture #	Topic	Chapter Sections	Text Problems
Th	09/02	1	Periodic Trends	9.1-9.10	9.1-9.12
M	09/06		NO CLASS – Labor Day		
W/M	09/08	2	NO CLASS – Rosh Hashana	5.1-5.5	5.1-5.6, 5.8, 5.10-13
Th	09/09	3	Acids and Bases-Lewis acidity Acids and Bases Reactions and Properties	5.6-5.7 5.8-5.9, 5.12-5.13	5.14-5.24 5.25-5.39
M	09/13	4	Oxidation and Reduction-Reduction Potentials	6.1-6.5	6.1-6.8
Th	09/16	5	NO CLASS - YOM KIPPUR		
M	09/20	6	Oxidation and Reduction –Redox Stability	6.6-6.18	6.9-6.17, 6.19
Th	09/23	7	Introduction to coordination Compounds	7.1-9.15	7.1-7.20
M	09/27	8	The d-block Elements	19.1-19.12	19.4, 19.7, 19.9,
Th	09/30	9	d-Metal Complexes	20.1	20.1-20.5
M	10/04	10	Exam I Lectures 1-9		

			11:00 AM -12:20 PM		
Th	10/07	11	Crystal field theory; Jahn-Teller effect; octahedral, tetrahedral, square planar complexes	20.2	20.6-20.9
M	10/11	12	Ligand field theory	20.3-20.4	20.10-20.13, 20.15, 20.17
Th	10/14	13	Electronic Spectra of complexes, term symbols, energies of the terms	20.5-20.8	20.18-20.20
M	10/18	14	Charge transfer bands, Selection Rules, Luminescence, Magnetism	20.5-20.8	20.20-20.24
Th	10/21	15	Mechanism of Square Planar Complexes Redox reactions, photochemical reactions	21.1-21.4	21.1-21.10, 21.14
M	10/25	16	Mechanism continued	21.5-21.15	21.18-21.23
Th	10/28	17	Organometallic Chemistry	22.1-22.5 22.13	22.8, 22.10, 22.11, 22.15 22.18
M	11/01	18	Examination II Lectures 11-17+		
TH	11/04	19	Organometallic Chemistry	22.14-2.19	22.20, 22.25, 22.26
M	11/08	20	Chapter 4	4.1-4.8	4.1, 4.4, 4.6-4.11, 4.15,
Th	11/11	21	Ionic Solids. Sizes of ions, ionic lattices, lattice energies	4.9-4.15	4.23, 4.28, 4.31, 4.32
M	11/15	22	Defects and nonstoichiometry. Electronic structure of solids	4.9-4.15 4.16-4.20	4.36-4.44
Th	11/18	23	Synthesis of materials. Defects and Ion transport	24.1-24.4	24.1-24.6
M	11/22	24	Framework structures. Optical Properties Phosphors and other applications	24.5-24.10	24.7-24.11
M/W	11/29		NO CLASS/ Monday is Wednesday class		
Th	12/02	25	Semiconductor chemistry. Molecular materials.	24.18-4.26	24.24-24.29
M	12/06	26		24.27-4.30	24.30, 24.34
Th	12/09	27	Nanostructures	25.1-25.2,	25.1, 25.4
M	12/13	28	General Principles. Heterogeneous Catalysis		
Th	12/16		Final Exam 8:00-11:00 AM 50% - Lectures 18-28 and 50% - Comprehensive 1-18		