

Inorganic Chemistry, Fall 2020

Syllabus

Course No. 01:160:371
Department of Chemistry and Chemical Biology
Rutgers, The State University of New Jersey

Times & Locations: Monday & Thursday 10:20 pm – 11:40 am; Zoom Online Teaching

Instructor: Weiwei Xie (office: CCB 3202)

Contact: weiwei.xie@rutgers.edu I encourage you to contact me by emails.

Office Hours: Monday 5:00 pm – 6:00 pm; Zoom Online Monday meeting link

Course Credits: 3

Course Duration: Sept 3, 2020 to Dec 10, 2020

Course Overview:

The course primarily covers acids and bases, oxidation and reduction, coordinated chemistry, elements and their compounds, frontiers. 01:160:371.

Course prerequisites:

01:160:361. Specifically, knowledge of molecular structures, symmetry, valence bonding (Lewis structures), elementary molecular orbitals,

Instructional Format and Philosophy:

Assigned Readings: Textbook

Lecture Notes: Slides for lecture will be posted on Canvas before the class. Students expected to download them in advance.

Live Lecture: instructor's live presentation of lectures and sample problems.

In Class Quiz (every lectures): students work with Instructor on the questions together in class

Homework Assignments (5): Each homework counts 4% to the final grade.

Study Guides: embedded links in lecture notes to other resources. No points.

Study Groups: Student groups will be created by instructor; Groups meet at fixed time; groups and individuals will prepare assignments for in class presentation; student-run self-help on homework.

Mid-Exam and Final Exam: virtual, in class.

Extra Help

Virtual Office Hour: live, fixed time TBD.

Assigned Readings from Textbook:

Inorganic Chemistry, 7th Edition (Weller, Overton, Rourke, Armstrong). Oxford Univ. Press (UK). 6th Edition may be used for Ch 1-8 are unchanged according to authors Forward Statement.

Lectures Notes, in Class Assignments, Study Guides (extra help)

Classes will consist of lectures in the form of slides and/or notes as well as sample problems/examples. Students should take written notes during class of any material the instructor covers on the board. Class slides will be made available in the files section of the Canvas site before each class. *Lectures and class slides are not exhaustive*, and students should use them *in conjunction* with the pre-assigned textbook readings, notes/examples taken during lectures and assigned homework problems to learn the course topics. Assigned readings from the textbook are associated with each lecture and are listed in the table below. Students should read the assigned section of the textbook *before* the associated lecture. **The lecture slides, notes and study guides are copyrighted and may not be posted on any website at or outside of Rutgers without the written permission of the course instructor. 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.**

Assigned Homework Problems:

The assigned homework problems will be taken mostly from the textbook and will be posted on Canvas. The purpose of the assigned homework problems is to assist students in learning about the course topics and to prepare them for the exams, which will contain questions similar to those in the assigned homework problems. There will be five assigned homework problems. A penalty will be applied to grades for homework that is handed in late.

Exams:

Two exams will be given: Exam 1 will cover acids and bases, oxidation and reduction, coordinated chemistry, main group elements and the associated assigned textbook readings. Exam 2 will cover D-block and f-block elements, physical techniques, and the associated textbook assigned readings. The examinations will cover the topics in the in-class slides, homework, and in-class example questions. The working problems and the conceptual problems at the end of each chapter of the textbook will help you understand the chemical concepts covered in the course more effectively and will help you prepare for the quizzes and exams. *Therefore, it is strongly suggested that you do all the assigned homework problems and some additional problems at the end of the relevant chapter of the textbook.* Exams will last for the duration of the class period (i.e., 80 min.). No make-up quizzes or exams will be allowed unless the absence is authenticated by means of legitimate, verifiable, documented excuses (e.g., signed doctors note, hospitable admittance slip, but *not* from non-professional medical staff, etc.) presented to the instructor at the end of a class or during the instructor's office hour. **Absence of medical excuse without verifiable documentation will not be accepted under any circumstances.**

Academic Integrity: The university academic integrity rules apply to this course and students taking this course; see <http://academicintegrity.rutgers.edu/academic-integrity-policy/>. Students are obligated to advise the instructor if violation of AI is observed.

Grading: The grade for the course will be based on homework, literature discussions, and exams.
Homework (5 times): 20% grade based on completeness
Literature Discussions (2 times): 20% grade based on completeness
Mid-term Exam: 30%
Final Exam: 30%

Topic: Chem 371 **Monday** Lecture

Time: 10:20am – 11:40 am

Join Zoom Meeting

<https://rutgers.zoom.us/j/95120420272?pwd=M25LU1ZCajB0ZTIDK01McEJFZDU5QT09>

Join by SIP

95120420272@zoomcrc.com

Meeting ID: **951 2042 0272**

Password: **11111**

One tap mobile

+16465588656,,95120420272# US (New York)

+13017158592,,95120420272# US (Germantown)

Join By Phone

+1 646 558 8656 US (New York)

+1 301 715 8592 US (Germantown)

+1 312 626 6799 US (Chicago)

+1 669 900 9128 US (San Jose)

+1 253 215 8782 US (Tacoma)

+1 346 248 7799 US (Houston)

Meeting ID: 951 2042 0272

Find your local number: <https://rutgers.zoom.us/u/acYDZTvGG6>

Join by Skype for Business

<https://rutgers.zoom.us/skype/95120420272>

Topic: Chem 371 **Thursday** Lecture

Time: 10:20am – 11:40 am

Join Zoom Meeting

<https://rutgers.zoom.us/j/96930290771?pwd=Yjh6VEVxemRvbHRHazZ3NGlZdmZCdz09>

Join by SIP

96930290771@zoomcrc.com

Meeting ID: **969 3029 0771**

Password: **44444**

One tap mobile

+13126266799,,96930290771# US (Chicago)

+16465588656,,96930290771# US (New York)

Join By Phone

+1 312 626 6799 US (Chicago)

+1 646 558 8656 US (New York)

+1 301 715 8592 US (Germantown)

+1 346 248 7799 US (Houston)

+1 669 900 9128 US (San Jose)

+1 253 215 8782 US (Tacoma)

Meeting ID: 969 3029 0771

Find your local number: <https://rutgers.zoom.us/u/acH065jcNA>

Join by Skype for Business

<https://rutgers.zoom.us/skype/96930290771>

Tentative Class Schedule & Assigned Textbook Readings (subject to change)

Class #	Day	Date	Topic	Homework assigned	Textbook
1	Th	9/3	<u>Lecture 1:</u> Course Overview; Acids & Bases	HW 1 assigned	5.1-5.17
	M	9/7	<u>Labor Day</u>		
2	Th	9/10	<u>Lecture 2:</u> Review; Oxidation & Reduction		6.1-6.11
3	M	9/14	<u>Lecture 3:</u> Review; Oxidation & Reduction		6.12-6.18
4	Th	9/17	<u>Lecture 4:</u> Review; Coordinate compounds		7.1-7.15
5	M	9/21	<u>Lecture 5:</u> Review; Periodic trends	HW 1 due, HW 2 assigned	9.1-9.11
6	Th	9/24	<u>Lecture 6:</u> Review; Hydrogen& Group 18		10.1-10.7 18.1-18.11
7	M	9/28	<u>Lecture 7:</u> Review; Group 1 & 2		11.1-11.17; 12.1-12.14
8	Th	10/1	<u>Lecture 8:</u> Review; Group 3 & 4		13.1-13.20 14.1-14.17
9	M	10/5	<u>Lecture 9:</u> Review; Group 5 & 6		15.1-15.17 16.1-16.16
10	Th	10/8	<u>Lecture 10:</u> Group 7; mid-term review		17.1-17.16
11	M	10/12	<u>Lecture 11:</u> d-block elements	HW 2 due, HW 3 assigned	19.1-19.12
12	Th	10/15	<u>Lecture 12:</u> d-metal complexes (I)		20.1, 20.2
13	M	10/19	<u>Lecture 13:</u> d-metal complexes (II)		20.3- 20.9
14	Th	10/22	<u>Lecture 14:</u> Coordinate chemistry		21.1-21.15
15	M	10/26	Mid-term exam (Chapters 5-18)		
16	Th	10/29	<u>Lecture 15:</u> d-metal organometallic (I)		22.1- 22.17
17	M	11/2	<u>Lecture 16:</u> d-metal organometallic (II)	HW 3 due, HW 4 assigned	22.18- 22.32
18	Th	11/5	<u>Lecture 17:</u> d-metal organometallic (II)		22.18- 22.32
19	M	11/9	<u>Lecture 18:</u> f-block elements	HW 4 due, HW 5 assigned	23.1- 23.13
20	Th	11/12	<u>Lecture 19:</u> Physical Techniques (I)		8.1-8.11
21	M	11/16	<u>Lecture 20:</u> Physical Techniques (II)	HW 5 due	8.12-8.17
22	Th	11/19	<u>Lecture 21:</u> Frontiers- Materials; Catalyst	Literature 1 assigned	Reading Chapter 24
23	M	11/23	<u>Lecture 22:</u> Frontiers- Bioinorganic		Reading Chapter 25
	Th	11/26	<u>Thanksgiving Day</u>		

24	M	11/30	Literature 1 discussion; Review d-block elements	Literature 2 assigned
25	Th	12/3	Literature 2 discussion; Review f and physical techniques	
26	M	12/7	Final Exam Review	
	Th	12/10		Final Exam (Chapters 8, 19-23)
