Chem 371: Inorganic Chemistry
Spring 2016

Instructor: Dr. Yeung-gyo Shin (yeungshin@gmail.com)
Office Hours: Mon. 4:40 p – 6:00 p in Tillett Hall 123

Lecture: Mon, Wed. 3:20 p – 4:40 p in Tillett Hall 258, Livingston Campus

Prerequisites: Chem 361: Chemical Bonding and Chem 306, 308 or 316: Organic Chemistry

Chemistry Undergraduate Office Administrator: Ms. Shaneika Nelson
WR 143 (Wight-Rieman Building, Chemistry Department)
(848) 445- 2606
s.nelson@rutgers.edu
Any problem involving registration, scheduling or other clerical issues are best handled by contacting Ms. Shaneika Nelson.

Required Materials
Text for Lecture: Duward Shriver, Mark T. Weller, Tina Overton, Fraser Armstrong, Jonathan Rourke, ***Inorganic Chemistry***, 6th Edition (2014), W.H. Freeman or Oxford Univ. Press.

Course Objectives and Goals: Chemistry 371 is designed to take students from the introductory principles of chemistry to 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 chemistry. 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, organometallic chemistry and modern concepts of solid state chemistry & nano-chemistry.

Course Requirements and Expectation: There will be two hourly exams (100 pts. ea.) and one final exam (200 pts.) for the total of 400 pts. The attached schedule is a ***tentative*** schedule of lectures and any changes will be announced during the lecture. On September 7th, a pre-semester assessment will be given covering electronic configuration, VSEPR, acid/base, redox, cubic system, reaction mechanism, molecular orbitals, etc. Points earned in pre-semester assessment will not be a part of your grade, but it may be used in considering borderline cases. Problems from the end of chapters will be assigned. Though they are not graded, you should keep up with them since similar problems will show up in exams. Occasionally, unannounced quizzes may be administered as extra credits which will not exceed the total points of 50 pts.

The letter grade will be assigned according to the total points you earned during the semester.

A	350 – 400
B	300 – 349
C	250 – 299
D	200 – 249
F	below 200

Website 160:371
The RU-Sakai website will be utilized for this course. All registered students should have access to the course site of Chem 371 with the following process:

1. Using a web browser from any location, go to www.sakai.rutgers.edu
2. Log in with your RU NetID and Password
3. Click on 160:371 Fall 2016
4. Go to "Resource" to access documents, e.g. syllabus, some material used in lecture, etc. You may want to download them just in case Sakai goes down. In some lectures, having a hard copy will be helpful in taking notes.
   Most material on this website is copyrighted and may not be posted on any other site at or outside of Rutgers without explicit written permission(s). Noncompliance with this policy will be treated as a violation of the Code of Student Conduct and will be referred to the Office of Students Conduct for action.
5. Grades will be released through Sakai.

NO make-up exams or quizzes will be given: No adjustment for missing quizzes will be made. If a student misses or will miss an ***exam*** for a ***valid excuse*** such as medical, religious and/or sanctioned college functions, the remaining exam may be prorated to make up for the missed exam when calculating the final grade. Absence from an Exam must be supported by appropriate documentation. No more than one exam will be excused.

Attendance: No attendance will be taken. However, it is your responsibility to catch up with lecture material. Forming a study group or a buddy system is highly recommended. If you are sick, please consider staying home to recuperate and to protect you & your classmates. If you require medical attention, see your primary care provider and/or Health Services, especially for missing a quiz or an exam.

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. "Incomplete" grade may be assigned, if a student in a good standing cannot complete a minor portion of the coursework due to extenuating circumstances in the latter ½ of the semester. The term "extenuating circumstances" may include (1) 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. Students who are experiencing an extenuating circumstance should contact the instructor as soon as possible.

Academic Integrity and Student Code of Conduct: Cheating will not be tolerated. Reporting infractions of the honor code is both your responsibility and the instructors. You may be required to show your Rutgers ID when you turn in your exam to compare your picture and signature. Students who caught cheating will fail the assignment, gets 0 point on the specific assignment regardless of amount that was plagiarized. University policy on academic dishonesty will be followed and the student(s) will be referred to the appropriate university office for disciplinary action. If the student do not agree with the assessment of the instructor, he/she may file a grievance through the Associated Dean of Undergraduate Affairs directly.

Students with Disabilities: The Americans with Disability Act mandates that reasonable accommodation will be made for students with documented disabilities in order to assure equal participation in the class. No accommodation can be made until the student self-identify with Letter of Accommodations from The Office of Disability Services.

Fall 2016: CHEM 371: Tentative Lecture Schedule

Day	Date	Topic	Sec.	Problems
W	9/7	Course policy and Pre-semester Assessment		
M	9/12	Molecular Orbital Theory – diatomic	2.7–10	2.20–25,31,34
W	9/14	Molecular Orbital Theory – polyatomic	2.11, 6.6–7	2.29,32,35
M	9/19	Periodic Trends	9.1–9.10	9.1–12
W	9/21	Acid/Base – Brönsted	4.1–5	4.1–6, 8, 10–13
M	9/26	Acid/Base – Lewis acidity	4.6–7	4.14–24
W	9/28	Acid/Base – Reactions and Properties	4.8–9, 4.12-13	4.25–39
M	10/3	Oxidation/Reduction - EMF	5.1–5	5.1 – 5.8
W	10/5	Oxidation/Reduction – Redox Stability	5.6–5.18	5.9-17, 19
M	10/10	***Exam I***		
W	10/12	The d-block Elements	19.1–12	19.4–7
M	10/17	Molecular Orbital Theory – M-complexes	20.2	20.6–9
W	10/19	Reduced symmetry	20.1	20.1–5
M	10/24	Electronic Spectra, Term Symbols & their Energy	20.3–4	20.10-13,15,17
W	10/26	Charge Transfer Bands, Selection Rules, Luminescence, Magnetism	20.5–8	20.18–24
M	10/31	Mechanism: Substitution Reaction	21.1–9	21.1–10, 14
W	11/2	Electron Transfer, Photochemistry	21.10–15	21.18–23
M	11/7	Molecular Orbital Theory – Organometallic	22.1–4	22.1–4
W	11/9	Ligands and Compounds	22.5,13–20	22.8,10,11,15, 18,20,25,26
M	11/14	***Exam II***		
W	11/16	Structure of Solids	3.1–8	3.1,4,6,11,15
M	11/21	Ionic Solids, Sizes of Ions, Lattice Energy	3.9–15	3.23,28,31,32
M	11/28	Defect, Electronic Structure of Solids	3.16–20	3.36–44
W	11/30	Synthesis of Materials, Defects and Transport	24.1–4	24.1–6
M	12/5	Metal Oxides, Nitrides and Oxides	24.5–10	24.7–11
W	12/7	Framework Structures, Optical Properties	24.11–17	24.12-16,19-23
M	12/12	Semiconductor, Molecular Materials	24.18–26	24.24–29
W	12/14	Nanostructures	24.27–30	24.30,34
F	12/23	12:00 p – 3:00 p: ***Comprehensive Final Exam*** *heavy with post Exam II material*		