CHM 3610: INORGANIC CHEMISTRY

Fall 2017 **Location: Leigh 207** **MWF 10:40AM – 11:30AM (Period 4)**

Instructor: Leslie J. Murray (*LJM*)
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Office hours: Mon 9:30AM – 10:30AM
Tues 4:00PM – 5:00PM
Thurs 8:00AM – 9:00AM *Last office hours: R 12/07 Office hours: 8-11AM*

Grad Assist.: Ricardo Ferreira Tianyu Zhang (CLB 410 or 414)
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Office hours: Tues 10:00AM – 11:00AM Mon 3:00PM – 4:00PM
Thurs 1:00PM – 2:00PM Fri 3:00PM – 4:00PM

Course Description and Objective: to provide an introductory understanding to current topics in inorganic chemistry

Texts (all books are on reserve at Marston Library)

1. Miessler, G. L., Fischer, P. J., and Tarr, D. A. *Inorganic Chemistry 5th Ed.* (abbreviated MFT)
2. Specific chapters/sections from the following texts:
   a. Wulfsberg, G. *Inorganic Chemistry*, University Science Books, 2000 (QD151.5 .W84 2000)
   b. Atkins, P., et al. *Shriver & Atkins' Inorganic Chemistry*, 5th Edition; Freeman, 2010 (QD151.5.S57 2010)
   c. Bowser, J. R. *Inorganic chemistry*, Pacific Grove, Calif.: Brooks/Cole Pub. Co., 1993 (QD151.5.B68)
3. Primary articles as noted in the "Topics & associated reading" section.

Grades

Grades will be based on five quizzes (10 points each), two exams during the semester (100 points for each exam), and the final exam (100 points). For information on UF's Grading Policy, see:
https://registrar.ufl.edu/grades/gradepolicy.html and https://student.ufl.edu/minusgrades.html
Course grades will be assigned on a curve with the following point totals used for guidance:
A: 350-316; A/B: 315-281; B: 280-246; B/C: 245-211; C: 210-176; C/D: 175-141; D: 140-101; F: <100

Homework

Suggested problem sets will be assigned with most questions from MFT and occasionally supplemented with problems from other sources. Problem sets will **not** be graded but students are **strongly** advised to do them. Solutions to these suggested problems will be provided one week after they have been assigned.

Quizzes

Quizzes will be administered at the start or end of class and will last ten (10) minutes. **No prior announcement of the date for quizzes will be given.** Quizzes can draw from the assigned reading up to the current week (*e.g.*, week #2 reading is fair game for first day of Week #2 so read ahead!), content from all prior lectures, or problem set questions from prior weeks. An approved calculator and pens/pencils are the only items that can be used; that is, devices such as phones, computers, and tablets are strictly prohibited. Use of non-permitted items will result in **zero** points awarded for that quiz without exception. Make-up quizzes will be administered only if absence from the scheduled date satisfies the criteria outlined in the "Attendance and Absence Policy" section (*vide infra*) and must be documented (*i.e.*, doctor's or appropriate UF official's note). To receive a make-up quiz, the student must notify *LJM* and provide appropriate documentation **at least one week in advance for predetermined absences** (e.g., official university activity) or **prior to the start of the class to be missed for unplanned absences** (*e.g.*, sickness). Failure to notify *LJM* in the stipulated timeframes will forfeit the student's access to a make-up quiz. In rare cases, *LJM* can be notified of an absence after the missed class, but prior notification must have been considered an unreasonable expectation or burden (*e.g.*, emergency hospitalization, sudden death in family). *LJM* should then be notified as soon as possible with appropriate documentation provided. It is solely at *LJM*'s discretion to accept an excuse after the missed class. **Beyond these extenuating circumstances, make-up quizzes will not be provided.**

Exams

Exams will be administered in LEI 207 and LEI 309 and cover all prior lectures and assigned reading. The current expectation is that exams will be held during periods E2 and E3 (8:20-10:10PM), but may be held in-class depending on room availability. The guidelines outlined in the "Quizzes" section (*vide supra*) including permissible items, penalty for using non-permitted items, and absences and the make-up policy similarly apply for exams. The final exam will cover material from the entire semester with a slightly greater focus on the material covered after the second exam.

	DATE	ROOMS	TENTATIVE TIME
Exam 1 (100 points)	**Friday, September 29**	**LEI 207 + LEI 309**	**E2+E3 (8:20-10:10PM)**
Exam 2 (100 points)	**Wednesday, November 8**	**LEI 207 + LEI 309**	**E2+E3 (8:20-10:10PM)**
Final Exam (100 points)	**Thursday, December 14**	**LEI 207 + LEI 309**	**12:30PM–2:30PM**

Regrade or Changes-to-Score Requests

All queries regarding exam scores must be made **within one week** after the graded exams have been returned to the class without exception. Concerns regarding points awarded should first be addressed to the TA. The TA will notify *LJM* and the student's course record will be amended if the TA agrees with the student's assessment. If the student is dissatisfied with the TA's response (*e.g.*, the TA does not agree that more points should have been awarded), the student may request a regrade of the exam by *LJM*. A regrade will be done on the entire exam only and not for a specific question. Submitting an exam for a regrade is the student's consent to accept the score awarded by *LJM* as the score of record even if it is lower than the initially awarded score.

Attendance and Absence Policy

Attendance is mandatory for exams and quizzes. Acceptable reasons for absence from class include illness*, serious family emergencies, special curricular requirements (e.g., judging trips, field trips, professional conferences), military obligation, severe weather conditions, religious holidays, court-imposed legal obligations (e.g., jury duty or subpoena), and participation in official university activities such as music performances, athletic competition, or debate.
*The university's policy on appropriate documentation of absence due to illness can be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx and
http://shcc.ufl.edu/forms-records/excuse-notes/

Academic Honesty

Students are required to be honest in their coursework. Any act of academic dishonesty will be reported to the Dean of Students, and may result in failure of the assignment in question and/or the course. *N.B. Unauthorized recordings are a violation of the honor code §3.i.* UF's honor code: https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/.

Accommodations for Students with Disabilities

Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. Contact the Disability Resources Center (http://www.dso.ufl.edu/drc/) for information about available resources for students with disabilities.

Other Resources: U Matter, We Care

Your well-being is important to the University of Florida. The U Matter, We Care initiative (www.umatter.ufl.edu/) is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Topics & associated reading (timetable provided is a best estimate of course progress):

The Elements, Atomic Structure, and Periodic Properties **week #1 & #2, 08/21-09/01**

Articles: *Formation of the Elements.pdf*, *ClementiRaimondi.pdf*, and *ProblemsWithMadelungRule.pdf*
MFT: sections 2.1-2.2 (week #1) & Ch 2: 2.3 (week #2)

Redox Chemistry **week #3, 09/04-09/08**

Wulfsberg: sections 6.1, 6.2, pg 264, 6.9 *or*
Atkins: sections 5.1-5.14 *or*
Bowser: chapter 9

Ionic Bonding **week #4, 09/11-09-15**

Articles: *EvidenceForTheIonicNature.pdf* and *The Born Equation and Ionic Solvation.pdf*
MFT: sections 7.1-7.2

Crystal Field Theory **week #5, 09/18-09/22**

Article: *CrystalFieldSplittingDiagrams.pdf*
Other: *CrystalFieldEnergies.pdf*
MFT: section 10.2.1 ***and***
Bowser: section 16.1

Molecular Orbital Theory **week #6 & #7, 09/25-10/6**

Articles: *BuildMOs.ConstructingLGOs.pdf* and *BuildMOs.NoAtomAtCenterOfSym.pdf*
MFT: sections 4.1-4.3, 5.1-5.4.3

Acids & Bases **week #8, 10/9-10/13**

Articles: *HSAB.Pearson.JCE1.pdf* and *HSAB.Pearson.JCE2.pdf* and *HSAB.Drago.pdf*
MFT: sections 6.4-6.4.1, 6.6-6.6.1

Ligand Field Theory & Coordination Chemistry **week #9, 10/16-10/20**

Article: *AOM-Richardson.pdf*
Other: *NomenclatureRules.pdf*
MFT: sections 9.1-9.3.5, chapter 10

Electronic Spectroscopy **week #10, 10/23-10/27**

Article: *determining spectroscopic terms.pdf*
Other: *Russel-SaundersTerms.pdf*
MFT: chapter 11

Reactions & Mechanisms + Organometallic Chemistry **week #11-#13, 10/30-11/20**

NB. These topics will be mixed together as a general description of reactions of transition metal complexes.

Other: *CommonLigands.pdf*
MFT: sections 12.1-12.8.1
MFT: sections 13.1-13.4.1, 13.5.1, 13.5.2, 13.6.1-13.6.3, 13.7
MFT: sections 14.1.2, 14.1.3, 14.1.4, 14.2.1-14.3.6

Bioinorganic Chemistry **week #14 & #15, 11/27-12/8**

Atkins: Chapter 27 (5^{th} Ed.) or Chapter 26 (6^{th} Ed.)

Bonding in Solids: Band Theory **week #16, 12/11-12/13**

MFT: sections 7.3-7.4 *or*
Atkins: sections 3.18-3.20