

## CHM 3610: INORGANIC CHEMISTRY

**Fall 2012**      **Location: Leigh 207**      **MWF 9:35AM – 10:25AM (Period 3)**

Instructor: Prof. Leslie Murray

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Office Hours: MWF 8:30AM-9:30AM

TAs: Matias Pascualini

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Office Hours: TR 8:30AM-9:30AM

WF 4:00PM-5:00PM

### **Course Description and Objective**

To provide a basic understanding of modern inorganic chemistry. Major themes include the application of group theory to structure and bonding, and ligand-field theory, and an introduction to reactivity at metal centers (e.g., organometallic reactions).

### **Required Text**

1. *Shriver & Atkins' Inorganic Chemistry 5<sup>th</sup> Edition*
2. The required text will be supplemented with handouts, specific topics covered by recommended/reserve texts, and references to the primary and secondary literature.

### **Recommended or Reserve Texts** (*freely available through the UF library website portal*)

1. Miessler, G. L. and Tarr, D. A., *Inorganic Chemistry 4<sup>th</sup> Ed.*
2. Cotton, F. A., *Chemical Applications of Group Theory*
3. Cotton, F. A., Murillo, C. A. and Bochmann, M., *Advanced Inorganic Chemistry 6<sup>th</sup> Ed.*
4. Greenwood, N. N. and Earnshaw, A. *Chemistry of the Elements 2<sup>nd</sup> Ed.*

### **Grades**

Grades will be based on problem sets (100 points), best two of three exams during the semester (250 points), and the final exam (200 points). For information on UF's Grading Policy, see:

<http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html> and

<http://www.isis.ufl.edu/minusgrades.html>

Course grades will be assigned on a curve with the following percentages used for guidance:

A: 550-501; A/B: 500-451; B: 450-401; B/C: 400-351; C: 350-301; C/D: 300-251; D: 250-200; F: <200

### **Problem Sets**

Over the course of the semester, ten (10) problem sets will be assigned. Problem sets will be distributed on the last class day of each week (e.g., Friday) and, unless otherwise stated by the instructor or TAs, are due at the beginning of the first meeting time of the following week (e.g., Monday at 9:35AM). Problem sets handed in after class but on the due date will receive a grade of M (5 pts) at most. Problem sets handed in after the due date will not be graded (0 pts). Problem sets will be graded as follows:

- Satisfactory denoted by an S (10 pts): Satisfactory (S) problems were attempted and there is an obvious understanding of the material demonstrated (i.e., only attempting a question is not satisfactory).
- Marginal denoted by M (5 pts): Marginal (M) grade will be assigned for sloppy work, not attempting a problem, if a significant portion is incorrect.
- Unsatisfactory denoted by U (0 pts): Unsatisfactory (U) majority of the problem sets is incorrect.

### **Exams**

Exams cover all prior lectures and reading assignments. It is the student's responsibility to ask questions during class or office hours (either instructor's or TA's) if they do not understand lecture or reading materials. Exams will be administered in class. Make-up exams will be administered only if absence from the scheduled date satisfies the criteria outlined in the "Attendance and Absence Policy" section (see

below) and is documented. To receive a make-up exam, the student is required to notify the instructor and provide documentation at least one week in advance (no exceptions). Beyond these extenuating circumstances, **make-up exams will NOT be provided**. Since there are no makeup exams, your lowest exam score (excluding the final exam) will be dropped, i.e., the best two exam scores out of the three. If you do poorly on one exam and then miss an exam later in the semester, the missed exam will be dropped (no exceptions). The final exam will cover the material from the entire semester, with a slightly greater focus on the material covered after the third exam.

### **Attendance and Absence Policy**

Although not used as part of student assessment, attendance is mandatory as the in-class discussion may diverge from the text. 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 and participation in official university activities such as music performances, athletic competition or debate. Absences from class for court-imposed legal obligations (e.g., jury duty or subpoena) must be excused.

\*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 and may not use notes during exams. 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. For University of Florida's honor code, see <http://www.dso.ufl.edu/sccr/honorcodes/honorcode.php>.

### **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.

### **Counseling and Mental Health Resources**

Students facing difficulties completing the course or who are in need of counseling or urgent help should call/contact one of the on-campus resources such as:

Counseling and Wellness Center (352-392-1575; <http://www.counseling.ufl.edu/cwc/>)

Student Health Care Center (352-392-1161; <http://shcc.ufl.edu>)

## COURSE OUTLINE

<u>Week (estimated)</u>	<u>Topics</u>
1	The Elements & Atomic Structure (Ch 1 & 9)
2	Introduction to Transition Metal Chemistry & Electrochemistry (Ch 5 & 7)
3	Ionic Bonding, Solids (Ch 3)
	<b>EXAM 1 ON SEPT. 19</b>
4, 5	Crystal Field Theory, Spectral & Magnetic Properties (Ch 20 but 20.2)
6-8	Molecular Orbital Theory/Group Theory (Ch 2, Ch 6)
	<b>EXAM 2 ON OCT. 17</b>
9	Ligand Field Theory (Ch 20.2)
10	Acids and Bases, Complex Stability (Ch 4, 21)
11	Mechanisms of Inorganic Reactions (Ch 21, 22)
	<b>EXAM 3 ON NOV. 14</b>
12	Organometallic Chemistry (Ch 26.3 – 26.9)
13	Inorganic Photochemistry
14	Bioinorganic Chemistry (Ch 27)
	<b>FINAL EXAM ON DEC. 13 (12:30PM – 2:30PM)</b>