

**Chemistry 6621****Advanced Inorganic Chemistry II****Lecturer**Adam S. Veige: [veige@chem.ufl.edu](mailto:veige@chem.ufl.edu)

392-9844

**CLB 412b**

T, Th period 4-5

**Lecture Hours**

T, Th Periods 3-4 (75 min)

**Textbook**

None (class notes and primary literature)

**Helpful Text**

Hartwig, J. *Organotransition Metal Chemistry*  
Miessler, G. L. and Tarr, D. A., *Inorganic Chemistry 5th Ed.*  
Shriver, Atkins, *Inorganic Chemistry, any edition.*  
Cotton, Wilkinson, Gauss, *Advanced Inorganic Chemistry*  
Cotton, *Chemical Applications of Group Theory*

**Grading**

Midterm Exam (2)

Oral Presentation

Final Exam

Problem Sets (~6)

|                   |     |
|-------------------|-----|
| Midterm Exam 1, 2 | 240 |
| Oral Presentation | 100 |
| Problem Sets 6    | 60  |
| Final Exam        | 200 |
| Total             | 600 |

600-525 A, 524-495 A-, 494-472 B+, 471-448 B, 447-425 B-, 424- 403 C+,  
402-379 C, 378-356 C-, 355-332 D+, 331-309 D, 308-287 D-, 286-0 E

**\*\*Note:** you have two weeks to request a re-grade of an exam or problem set. **\*\*** After two weeks the score will be final. Warning: I photocopy exams and problems sets and will check with the copy prior to re-grading.

To review the current UF grade point equivalencies go to:

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

**Examinations**

Exams: Thursday, February 12<sup>th</sup> 7:25 – 10:25 am, and  
Thursday March 26<sup>th</sup> 7:25 – 10:25 am .

Final Exam: Tuesday April 21<sup>st</sup> 7:25 – 10:25 am.

**Oral Presentation**

You will prepare a 30 min oral presentation on a topic to be determined.

Here I include links to common journals with an emphasis on Inorganic Chemistry.

- [Science](#)
- [Nature](#)
- [American Chemical Society Journals](#)
  - [Journal of the American Chemical Society](#)
  - [Inorganic Chemistry](#)
  - [Organometallics](#)
  - [Accounts of Chemical Research](#)
  - [Chemical Reviews](#)
- [Wiley InterScience](#)
  - [Angewandte Chemie International Edition](#)
  - [European Journal of Inorganic Chemistry](#)
  - [Chemistry - A European Journal](#)
- [Royal Society of Chemistry Journals](#)
  - [Dalton Transactions](#)
  - [Chemical Communications](#)
  - [Chemical Society Reviews](#)
- [Elsevier Science Direct Chemistry Journals](#)
  - [Journal of Organometallic Chemistry](#)
  - [Polyhedron](#)
  - [Inorganica Chimica Acta](#)
  - [Journal of Inorganic Biochemistry](#)
  - [Journal of Molecular Catalysis A: Chemical](#)
  - [Coordination Chemistry Reviews](#)
  - [International Journal of Hydrogen Energy](#)
- [Proceedings of the National Academy of Sciences](#)
- [Bulletin of the Chemical Society of Japan](#)
- [Journal of Biological Inorganic Chemistry](#)
- [Journal of Chemical Education](#)
- [Nature Chemistry](#)

### **Missed Exams**

**No make-up exams will be provided.** Arrangements will be made for students that have official UF travel conflicts. Notification and documentation must be provided one week in advance (no exceptions).

**Accommodation for Students with Disabilities** Students requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

## **Lecture**

Chemistry 6621 will survey modern inorganic/organometallic concepts of kinetics, reactivity, and mechanisms.

## **Objectives of Course**

- 1) This class builds on the principles learned in CHM 6620. The tools learned in 6620 are employed to solve problems focusing on reactivity, kinetics and mechanisms.
- 2) Another objective is to sharpen critical thinking skills. This course has very little regurgitation of information. Instead, an emphasis is placed on employing knowledge to solving problems.
- 3) Develop skills necessary for evaluating current literature critically.

## **Problem Sets**

Problem sets will be assigned at intervals of approximately one week. Problem Sets are due at the beginning of class. Problem sets handed in immediately after class but on the same day will be assigned a grade of M (5 pts). Problem sets handed in after the due date will not be graded (0 pts) Solutions will be provided.

Grading: Problem sets will be graded as follows

Satisfactory: S (10 pts)

Marginal: M (5 pts)

Unsatisfactory: U (0 pts)

Satisfactory (S) problems were attempted and there is an obvious understanding of the material demonstrated. (i.e. just attempting a question is not satisfactory)

Marginal (M) grade will be assigned for sloppy work, not attempting a problem, if a significant portion is incorrect.

Unsatisfactory (U) majority of the problem sets is incorrect.

## **Class Attendance**

Class attendance is mandatory since some discussion may diverge from the text.

## **UF Policies:**

### **UNIVERSITY POLICY ON ACCOMMODATING**

**STUDENTS WITH DISABILITIES:** Students requesting accommodation for disabilities must first register with the Dean of Students Office (<http://www.dso.ufl.edu/drc/>). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams. Accommodations are not retroactive; therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

**UNIVERSITY POLICY ON ACADEMIC MISCONDUCT:** Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Honor Code at <http://www.dso.ufl.edu/students.php>.

**NETIQUETTE: COMMUNICATION COURTESY:** All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats.

**Other Information:**

Honor Code: <http://www.chem.ufl.edu/~itl/honor.html>

Disabilities: <http://www.chem.ufl.edu/~itl/disabilities.html>

Counseling: <http://www.chem.ufl.edu/~itl/counseling.html>

**Honesty Policy**

All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others.

**UF Counseling Services**

Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:

- University Counseling Center, 301 Peabody Hall, 392-1575, Personal and Career Counseling.
- SHCC mental Health, Student Health Care Center, 392-1171, Personal and Counseling.
- Center for Sexual Assault/Abuse Recovery and Education (CARE), Student Health Care Center, 392-1161, sexual assault counseling.
- Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.

**Disclaimer:**

This syllabus represents my current plans and objectives. As we go through the semester, those plans may need to change to enhance the class learning opportunity. Such changes, communicated clearly, are not unusual and should be expected.

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|--------------|---|
| Section I    | Review  |
| Section II.  | Substitution Processes<br>a) Lability<br>b) Dissociative & Interchange<br>c) Associative & Interchange<br>d) Kinetics                   |
| Section III. | Electron Transfer Reactions<br>a) Outersphere<br>b) Innersphere<br>c) Atom Transfer   |
| Section IV.  | Oxidation Reactions & Biologically Relevant Oxidations<br>a) General<br>b) Autoxidation<br>c) Selective Oxidations                      |
| Section V.   | The Hydrogen Economy<br>a) Metal Hydrides<br>b) Hydrogen Fuel Cell<br>c) Photovoltaics<br>d) Hydrogen Production<br>e) Hydrogen Storage |
| Section VI.  | Special Topics  |