

Advanced Inorganic Chemistry (C401 & C501)

Fall 2006

TTh 9:15-10:30 am

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Office Hrs: TTh 10:30-11:30
E 717

Requirements:

Pre-requisites: C322 (Physical Chemistry Lecture) or equivalent

Textbook: Inorganic Chemistry (Shriver & Atkins)

Course Description and Objectives:

This course is designed to both expand the student's knowledge of Inorganic Chemistry and create substantive opportunities to develop skills for independent learning. The course is designed to build on knowledge and skills from previous coursework.

The content of the course includes the following topics

- atomic and molecular structure
- solid structure
- molecular shape and symmetry (group theory)
- bonding theories
- the structure, spectroscopy and reactivity of transition metal
- organometallic chemistry
- inorganic acids and bases
- inorganic redox chemistry
- bioinorganic chemistry

At the successful completion of this course, a student should be able to

- compare and contrast inorganic chemistry with other subdisciplines of chemistry
- demonstrate knowledge of the fundamental topics and theories important in the subdiscipline of inorganic chemistry
- describe his/her understanding of inorganic chemistry both in written and oral forms
- read the current literature in inorganic chemistry and understand the basic relevance of current research in the field.
- solve problems in inorganic chemistry.

Instructor's Notes & Handouts

Are available on the course Blackboard website. On occasion, when they are not ready before class, they will be handed out in class.

Attendance

Attendance is not mandatory, however it is strongly recommended that you attend all lectures in order to stay current with the material and to know what will be covered on midterm exams. Habitual absence will reduce the instructor's sympathy if you are having trouble achieving a satisfactory grade. Attendance will also be used as a tie breaker in the event your score is borderline between two letter grades.

Problem Sets:

- Problem sets will be assigned and collected on a regular basis. Some chapters will have a single assignment; others will be broken into more than one assignment.
- Each problem set will be graded out of a total of 50 points. The total homework score percentage (out of 100%) will contribute to the final course grade. Students are encouraged to discuss the assignment problems. However, each student must do the work of the problem set independently. The work turned in must be clearly one's own.
- Problem sets will be accepted up to 1 day late, but will lose 5 points. Keys will be posted on Bb two days after the assignment is due.
- Unless a student requests assistance from the instructor, it will be assumed each student is comfortable with successfully answering questions asked on the homework.

Exams

- There will be 3 mid-term exams, each worth 100 pts.
- A comprehensive take-home final exam will be worth 100 pts. It will be due Thursday, December 14 at 10am.

End-of-Semester Special Project

Each student will choose a project topic based upon a paper from the primary literature. Topics will be focused in the area of bioinorganic chemistry or materials chemistry, depending on student interest. The project will culminate with each student generating problems for a class problem set (50 pts) and delivering a 15 minute oral presentation (50 pts).

Course Grading

The course grade will be assigned according to the following scale:

94-100% = A, 90-93% A⁻, 87-89 = B⁺, 83-86 = B, 80-82 B⁻, 77-79 = C⁺, 73-76 = C, 70-72 C⁻ 67-69 = D⁺, 63-66 = D, 60-62 D⁻, <60% = F

These ranges may be adjusted down (for example, an A⁻ may be anything above an 87%) but they will not be adjusted up.

Percentages will be calculated based on the total number of points earned out of 900 total possible

3 in class exams + final = 400 pts

homework = 400 pts (4x the percentage of the total homework score)

Special Project problems and presentation = 100 pts

Graduate Credit & Grading

Graduate students will be expected to complete an additional assignment associated with the end of the semester project. This will involve a written paper of 5-8 pages in length. Details of the assignment will be discussed later in the semester. The paper is worth an additional 50 points, so graduate student grades are calculated out of 950 total points.

C401 Course Schedule – Fall 2006

Mon	Tuesday	Wed	Thursday	Fri
21	AUG 22 <i>Chapter 1</i>	23	24 <i>Chapter 1-2</i>	25
28	29 <i>Chapter 2</i>	30	21 <i>Chapter 2</i>	1
4 Labor Day	SEPT 5 <i>Chapter 3</i>	6	7 <i>Chapter 3</i>	8
11	12 <i>Chapter 3</i>	13	14 <i>(overflow topics)</i> EXAM 1	15
18	19 <i>Chapter 3</i>	20	21 <i>Chapter 7</i>	22
25	26 <i>Chapter 7</i>	27	28 <i>Chapter 7</i>	29
2	OCT 3 <i>Chapter 8</i>	4	5 <i>Chapter 8</i>	8
9	10 <i>Chapter 8</i>	11	12 <i>(overflow topics)</i> EXAM 2	13
16	17 <i>Chapter 8, 19</i>	18	19 <i>Chapter 19</i>	20
23	24 <i>Chapter 19</i> • Review Special Project	25	26 <i>Chapter 19</i> Guest instructor: Eric Brown	27
30	31 <i>Chapter 19-20</i> • Special project paper chosen	1	NOV 2 <i>Chapter 20</i>	3
6	7 <i>Chapter 21</i>	8	9 <i>(overflow topics)</i> EXAM 3	10
13	14 <i>Chapter 21,25</i> •	15	16 <i>Chapter 4</i> • Special Project Problems Due	17
20	21 Thanksgiving Break	22	23 Thanksgiving Break	24
27	28 <i>Chapter 5</i> • Special problem sets assigned	29	30 <i>Chapter 26</i>	1
4	DEC 5 • Presentations 1-4 • Special problem set 1 due*	6	7 • Presentations 5-8 • Special problem set 2 due*	8
11	12 Final exam distributed	13	14 Final Exam Due 10am	

*Due at start of class