

Syllabus Chem 2120

Fall 2019

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Class: MW 12-1:15pm, Eberly Hall 228

Textbook: Inorganic Chemistry 5th Edition.

Miessler, Fischer, and Tarr. Pearson.

Lectures are based on material from current scientific literature and various other textbooks, but the Miessler, Fischer, and Tarr textbook will be most central to the topics discussed.

Important dates:

Aug 26th – First day of class

Sep 2nd – Labor Day, no lecture

Nov 25th and 27th – Thanksgiving Recess, no lecture

Dec 4th – Last day of class

Grading:

3 exams*: 250 pts

Group project (presentation)**: 100 pts

Individual project (presentation)**: 100 pts

Group contribution/participation: 50 pts

Total: 500 pts

Primary topics:

- Main group chemistry
- Bonding theory
- Coordination chemistry
- Organometallic chemistry/Catalysis
- Special topics
- Group & individual projects

Office hours: by appointment.

Practice problems:

There will be practice problems available to you before each exam. I recommend you also work textbook problems independently, although none will be officially assigned.

Class structure:

We will be covering multiple topics throughout the semester. Some topics may take more or less time. We will not be following a rigid schedule, and some of the exams may be rescheduled if at all necessary.

Exams:

Although the exams cover specific blocks of material, you can expect to see concepts on the second exam which were covered on the first exam. The final exam is cumulative. ***I will not give make-up exams, but I will consider allowing students to take the exam early, on a case by case basis, provided that there is a legitimate reason.*** *Each exam will be evaluated on a 100-point scale but your lowest score of the three will be graded on a 50-point scale.

Group project:

Groups of 2-3 students will each present a lecture on the research of a modern leader in inorganic chemistry. Details will be distributed in an assignment. ***50 points will be assigned from peer evaluation, the other 50 points will come from my evaluation.*

Individual project:

Each student will identify a current scientific problem or challenge and give a short presentation at the end of the term. Emphasis will be given to problem selection rather than the proposed solution. This means the student will need to **dig deep** and justify why this is a current challenge. More details will be distributed in an assignment. ***50 points will be assigned from peer evaluation, the other 50 points will come from my evaluation.*

Group contribution/participation:

I will observe group interactions and class participation. Attendance is your responsibility, I will not be recording it, but it will be hard for you to get participation points if you do not come to class. ***Special note: attendance is required during group and individual presentations, fail to attend will be penalized.***

Academic integrity:

Students in the course are expected to comply with the University of Pittsburgh's Policy on Academic Integrity. If you are not aware of the specifics, you may obtain these guidelines from the CAS Dean's Office or on the web at <https://as.pitt.edu/faculty/policies-and-procedures/academic-integrity-code>

Violations of these guidelines can result in a zero for the assignment or failure of the course.

Disability:

If you have a disability for which you are or may be requesting an accommodation, please contact both me and the office of Disability Resources and Services (contact info below) as soon as possible so that we can make any necessary arrangements. The Disability Resources and Services office is located in William Pitt Union, Room 216. Their phone number is (412) 648-7890. They will be able to verify the disability and determine reasonable accommodations for this course.

#	Date	Topic	Reading
1	Aug 26 th	Class overview, simple bonding models	Ch. 2-3 (MFT)
2	Aug 28 th	Carbon chemistry. Fullerenes, nanotubes, graphene, and others.	
	Sep 2 nd	<i>Labor Day – no lecture</i>	
3	Sep 4 th	Boron chemistry	
4	Sep 9 th	Main group chemistry I	Ch. 8 (MFT)
5	Sep 11 th	Main group chemistry II	Ch. 8 (MFT)
6	Sep 16 th	Symmetry and Group Theory I	Ch. 4 (MFT)
7	Sep 18 th	Symmetry and Group Theory II	Ch. 4 (MFT)
8	Sep 23 th	Vibrational analysis	Ch. 4.4.2 (MFT)
9	Sep 23 rd	Molecular orbitals I (light elements)	Ch. 5 (MFT)
10	Sep 25 th	Molecular orbitals II (light elements)	Ch. 5 (MFT)
	Sep 30 th	Exam I	
11	Oct 2 nd	Coordination chemistry I (intro)	Ch. 9
12	Oct 7 th	Coordination chemistry II (CFT, MOT, LFT)	Ch. 10.2-10.4
13	Oct 9 th	Angular overlap model and descent in symmetry	
14	Oct 14 th	Coordination chemistry: electronic spectra	Ch. 11
15	Oct 16 th	Coordination chemistry: reactions and mechanisms	Ch. 11
16	Oct 21 nd	Organometallic chemistry: introduction, ligands & electron counting	Ch. 12
17	Oct 23 rd	Organometallic chemistry: reactions	Ch. 13
18	Oct 28 th	Organometallic chemistry: reactions	Ch. 14
19	Oct 30 th	Organometallic chemistry: select reactions	Ch. 14
	Nov 4 th	Exam II	
20	Nov 6 th	Bioinorganic chemistry	
	<i>Nov 9th</i>	<i>Group presentations and individual challenge summary must be uploaded to CourseWeb before midnight</i>	
21	Nov 11 th	Group presentations (random selection)	
22	Nov 13 th	Group presentations (random selection)	

	<i>Nov 16th</i>	<i>Individual presentations must be uploaded to CourseWeb before midnight</i>	
		Group presentations (random selection)	
24	Nov 20 st	Scientific problem presentations (random)	
	<i>Nov 25th & 27th</i>	<i>Thanksgiving Recess – no lecture</i>	
24	Dec 2 nd	Scientific problem presentations (random)	
25	Dec 4 th	Scientific problem presentations (random)	
	Dec 9 th	Final exam according to calendar	