

# Chemistry 127

## Inorganic Chemistry II

### Instructor

Professor Jenny Yang  
Reines Hall: 3038D

**Office Hours:** Monday 2-3 pm

### Teaching Assistant:

**Course:** MWF 9 – 9:50 pm, MSTB 122

**Discussions:** M 1-1:50 pm; W 2-2:50 pm; F 12-12:50 pm

### Grading

Homework: 20%

Quizzes: 15%

Midterm #1 (Feb 7): 20%

Midterm #2 (Mar 14): 20%

Final Paper: 20%

Classroom Participation: 5%

**Textbook:** Inorganic Chemistry, Miessler & Tarr. I use an older version of this textbook (2<sup>nd</sup> edition), but any version is fine, just note that page Chapter numbers may not be the same as what I reference. The course will be based on the textbook and discussions from lecture.

### Grading:

Quizzes will be both announced and unannounced. Each midterm will cover material from the first and second half of the course, respectively. For the final paper, I will choose publications from the scientific literature and you will each choose one from which to write your paper. The paper will discuss the results of the paper with respect to the current research on the topic. It will be a minimum of 2 pages, 10 pt arial, single spaced, with 1 inch margins. Class participation includes attendance.

### Course Content:

This is an advanced inorganic chemistry course. In Chemistry 107 you should have become familiar with basic coordination chemistry, molecular orbital theory, group theory, and electronic absorption spectroscopy. In this course we will further investigate topics important to inorganic chemist. Specifically our focus will be on the kinetics, thermodynamics, and mechanisms of inorganic reactions. This will include classical coordination compounds, organometallic compounds, main group compounds, transition metal active sites of enzymes, and important catalysts in industrial reactions. The goal is to familiarize you what has been established in inorganic chemistry and how that knowledge is applied to current research to answer new scientific questions.

A loose syllabus:

Week 1 (Jan 6 - Jan 10): Coordination geometries, types of bonding, summary of spectroscopic techniques (based on lecture)

Week 2 (Jan 13 - Jan 17): Coordination Chemistry: Reactions and Mechanisms (Chapter 12, M & T)

Week 3 (MLK Holiday, Jan 22- Jan 24): Coordination Chemistry: Reactions and Mechanisms (Chapter 12, M & T)

Week 4 (Jan 27 – Jan 31): Organometallic Chemistry (Chapter 13, M & T)

Week 5 (Feb 3 – Feb 7): Organometallic Chemistry (Chapter 13, M & T), Midterm

Week 6 (Feb 10 – Feb 14): Organometallic Reactions and Catalysis (Chapter 14, M & T)

Week 7 (President's Day, Feb 19 – Feb 21): Organometallic Reactions and Catalysis (Chapter 14, M & T)

Week 8 (Feb 24 – Feb 28): Topics in Main Group Chemistry (Chapter 15, M & T)

Week 9 (Mar 3 – Mar 7): Bioinorganic Chemistry & Environmental Chemistry (Chapter 16, M & T)

Week 10 (Mar 10-14): Bioinorganic Chemistry & Environmental Chemistry (Chapter 16, M & T), Midterm