Point Loma Nazarene University
Department of Chemistry

CHE468 – Advanced Inorganic Chemistry II
Spring Term, 2018

MWF, 7:30 – 8:20 pm in LA 1

Dr. Laurance G. Beauvais
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Office hours: M, 1:00 – 2:00 pm; WF, 12:15 – 2:00 pm. Th, noon – 1:00 pm

Rohr Science 302C
(619) 849-3251

Prerequisite
Completion or enrollment in CHE466 is required.

Course Description

The principles of inorganic chemistry, including symmetry, atomic and molecular structure, bonding theories, energetics, kinetics, and spectroscopy, are developed and applied to a range of inorganic compounds.

Course Objectives

At the completion of this course, students will be able to:

- predict and explain electronic configurations, periodic trends, and structures of simple main-group compounds.
- assign point groups for molecules and ions, and use group theory to build qualitative molecular orbital diagrams and identify Raman and IR active modes.
- apply acid-base and donor-acceptor principles to understand reactivity of inorganic compounds.
- know the fundamentals of coordination chemistry, including nomenclature, isomerism, ligand field theory, molecular orbitals, ligands, and electronic spectroscopy.

Textbook
Inorganic Chemistry, Miessler, Fischer, and Tarr, 5th edition, Pearson, 2014.

Lecture Materials
Lecture materials and other useful information will be available on Canvas.

Presentation
Each student will deliver a 15–20 minute presentation discussing one of the prominent inorganic chemists interviewed for the *Voice of Inorganic Chemistry* program. The interviews are available at http://pubs.acs.org/page/inocaj/multimedia/voices.html. More details will be made available regarding this assignment.

Problem Sets and Quizzes
Problem sets are due at the beginning of class on the day indicated on the assignment. No late work will be accepted. Quizzes will be given during class time. Alternate arrangements will be made for students with valid excused absences.

Grading
The final grade will be determined as follows:

Problem Sets & Quizzes	20%
Presentation	10%
In-Class Activities	10%
Midterm Exams	25%
Final Exam	35%

Letter grades will be determined at the end of the semester.

OTHER MATTERS:

Student Privacy

Point Loma Nazarene University adheres to the provisions of the student privacy act. Following FERPA guidelines, grades in this class will be communicated to students on an individual basis. However, exams will be returned in class in such a way that scores are not visible. All other graded works will be returned in your lab section. If you are not comfortable with this procedure, please see the instructor to make special arrangements. This request must be made during the first two weeks of the course.

ACADEMIC HONESTY⊛

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See Academic Policies for definitions of kinds of academic dishonesty and for further policy information.

ACADEMIC ACCOMMODATIONS⊛

If you have a diagnosed disability, please contact PLNU's Disability Resource Center (DRC) within the first two weeks of class to demonstrate need and to register for accommodation by phone at 619-849-2486 or by e-mail at DRC@pointloma.edu. See Disability Resource Center for additional information.

ATTENDANCE AND PARTICIPATION⊛

Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the student is absent from more than 10 percent of class meetings, the faculty member can file a written report which may result in de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation. See Academic Policies in the Undergraduate Academic Catalog.

Topics and associated reading (timetable is a best estimate of course progress)

Week (Dates)	Topic
1 (1/8 – 1/12)	**The Elements, Atomic Structure, and Periodic Properties** Reading: Chapter 2
2 (1/15 – 1/19)	**Lewis Structures and Redox Chemistry** Reading: Lewis Structures (chapter 3) Reading: Redox chemistry (handout)
3 (1/22 – 1/26)	**Redox Chemistry and Ionic Bonding** Reading: Chapter 7, sections 1 & 2
4 (1/29 – 2/2)	**Symmetry and Group Theory** Reading: Chapter 4
5 (2/5 – 2/9)	**Molecular Orbital Theory** Reading: Chapter 5
6 (2/12 – 2/16)	**Exam 1** **Acids & Bases** Reading: Chapter 6
7 (2/19 -2/23)	**Introduction to Coordination Chemistry** Reading: Chapter 9
8 (2/25 – 3/2)	**Crystal Field Theory and Ligand Field Theory** Reading: Chapter 10
	Spring Break 3/5 – 3/9
9 (3/12 – 3/16)	**Electronic Spectroscopy** Reading: Chapter 11
10 (3/19 – 3/23)	**Reactions and Mechanisms** Reading: Chapter 12
11 (3/26 – 3/28)	**Review and Exam 2**
12 (4/2 – 4/6)	**Organometallic Chemistry** Reading: Chapter 13
13 (4/9 – 4/13)	**Organometallic Reactions and Catalysis** Reading: Chapter 14
14 (4/16 – 4/20)	**Solid State Chemistry and Band Theory**
15 (4/23 – 4/27)	**Special Topics**
	Final Exam Monday, April 30, 7:30 – 10:00 am