

# Intermediate Inorganic Chemistry, Chem 3360 Fall 2016

## Lecture (Laney 103): TTh 8:00 – 9:15 am CRN = 10569



**Instructor** Dr. Patrick Desrochers  
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Web Page:  
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username = chem3360 password =

**Office hours** M 3 - 4 pm, Tu 930-1030 am, WTh 11 am – 12 pm **drop-in times**  
Other times by appointment (call or email). **Use this time.**  
It works best if you come prepared to my office with specific questions about lecture or homework.

**Text** *Descriptive Inorganic Chemistry* (5<sup>th</sup> Ed.) by G. Rayner-Canham & T. Overton, Freeman ©2010.

Grading	category points	your percent in the category	your points in the category
	quizzes (weekly)	30	Use your pct to determine your points in each category.
literature studies	10		
exams	40		
final exam (Dec 8, 8 am)	20		
TOTAL POSSIBLE	100		

The lowest quiz and hour exam will be dropped. Final exams may not be dropped.

**Grades: A 89 - 100 points B 79-88 C 69-78 D 57-68 F < 57**

**Consult my webpage for examples of grade calculations.**

UCA adheres to the requirements of the Americans with Disabilities Act. A student with a documented disability (e.g., physical, learning psychiatric, vision, hearing, etc.) who needs to arrange reasonable accommodations must at the beginning of the semester contact the instructor and UCA Office of Disability Services at 450-3135.

**Course Description** Extension of principles of chemical structure, periodicity, and applications of inorganic systems to industrial, environmental, and biochemical processes. Three hours of lecture per week. Counts towards the non-ACS chemistry major or a general science major; counts as core inorganic in the ACS-certified biochemistry major. Elective option for the ACS-certified chemistry BS degree: Standard Track. Prereq: At least a C in CHEM 1451.

**Course Objectives** Survey of physical and chemical properties of the elements; describe trends using the laws of periodicity. Use tools from general chemistry—atomic structure, electron configurations, Lewis dot/VSEPR, Lewis acids/bases, thermodynamics ( $K_{eq}$ ,  $\Delta G$ ,  $E$ ), and oxidation numbers—to understand this periodicity. Use the chemistry of representative elements to understand important industrial, biological, and environmental processes.

**Exams and Quizzes** **Exams** (75 min) dates are posted on the syllabus. Plan your schedule accordingly; these dates rarely change. **Quizzes** (first 10 min of class) are always announced at least one class period prior to the day they are given. These timed exams and quizzes typically consist of short answer questions and questions requiring numerical work.

**Literature Studies** You will periodically be asked to peruse the current chemical literature (2016 only) and prepare a brief written summary of an article that illustrates some topic related to current lecture discussions. Requests for these will be announced in class. Completed studies must have your name in the file (if sent electronically), the title of the article, including authors and journal name, published year, volume, page(s). *ASAP* articles (ACS journals) must include the date. You may also include the DOI number for quick referral. It must also include at least three sentences in your own words (do not cut and paste from the article) explaining how this article illustrates some of the current chemistry being discussed in lecture. **Consult website for an example.**

### **Policies** 1. Attendance

People who miss classes typically do poorly in this course. Do not be one of these people. Three unexcused absences will result in a WF grade. Students are responsible for obtaining information covered during an absence.

### 2. Homework

Homework problems to work and develop your mastery of material discussed in lecture and the text are listed on the Lecture Schedule. Your success on timed exams and quizzes is directly related to the effort you spend working and *understanding* all of these problems.

### 3. Makeups

No makeup quizzes or exams will be offered. A missed quiz or exam will be dropped as your lowest score.

**Additional university policies and announcements are summarized on the last page of this syllabus. Students should read these announcements and be familiar with the policies they describe.**

## Lecture and Exam Schedule

Date	Topic refer to Daily Boardlist	Assigned reading	Practice Homework
Aug 18	Atomic structure, e config, orbitals	Ch 1	1.1 – 2, 4 – 22
23	Periodic table trends (r, IE, EA)	Ch 2	2.3, 5-6,9,11,12,17,19-22,27-28,30-33,37
25	Thermodynamics	Sec 6.2-6.3, omit pp 116-117 now	6.1 – 10, 22, 29, 35,36a,44
30	Oxid No.'s, bal. redox, $\Delta G = -nFE$	Sec 8.1 – 8.8	8.3 – 8, 10 – 26, 36, 10.9
Sep 1	Hydrogen	Ch 10, Sec. 3.2 – 3.3 MO's, H econ p 128, p 198 – 199	3.3, 10.1, 6-8, 10,11, 14, 18-21,27
6			
8	<b>Exam 1 (topics to date)</b>		
13	Ionic sphere packing, ionic survey	Sec 4.3 – 4.5, Ch 5	4.7, 9 – 12, 19, 5.2 – 11, 14,17,19-21
15	Haber	Sec 6.1 – 6.3	6.13, 6.18 – 19, 6.22 – 24
20	Li family	Ch 11, Sec. 9.1 – 9.3, p 197, p 203	11.1,3-4,7-8,11,16,17,20,25,27
22			
27	Be family	Ch 12, Sec. 9.2 – 9.3, p 197, p 203,	12.1– 6,9,11,15,16,18-19,22,28,30,9.7,9.9
29			
Oct 4	<b>Exam 2 (topics to date)</b>		
5	Covalent, shape, polarity	Sec 3.1, 3.6 – 3.12	3.11-24,27-34,42, 43
11	Boron family	Ch 13, Sec. 7.2-7.6	13.1,2,7-14,18,19,22,24,25,29,32,35,39, 9.10
13	<b>FALL BREAK</b>		
18			
20	Carbon family	Ch 14, Sec 8.1 – 8.8	14.1,5-8,11,12,14-18,22-27,29,30,33-37,
25			43,45,49,50,52,53,56,58
27	Nitrogen family	Ch 15, Sec. 3.2 – 3.4 MO's, Sec 8.1 – 8.8	15.1-5,7,8,11-19,22-31,33-35,38,42,43,46,
Nov 1			49,51,52,58,61-62
3	<b>Exam 3 (topics to date)</b>		
8	Oxygen family	Ch 16, Sec. 3.2 – 3.4 MO's, Sec 8.1 – 8.8	16.1-4,10,11,13,14,16-18,21,27-29,31-34,
10			36,38,40,41,46,47,50,53,54,66
15			
17	TM coord chem, ligands, $M^{n+}$ , $d^n$	Sec 19.1-10, Sec 7.4, 7.6-7.7	35-37,40,44,45,48,49,53
22	CN 6, 5, 4		19.1-7,13-19,22,25,26,28,29,33
24	<b>THANKSGIVING BREAK</b>		
29	color and magnetism		
Dec 1			
Dec 8	<b>8:00 – 10:00 am Comprehensive Final Exam</b>		

# University Academic Policies

**Academic Integrity** The University of Central Arkansas affirms its commitment to academic integrity and expects all members of the university community to accept shared responsibility for maintaining academic integrity. Students in this course are subject to the provisions of the university's Academic Integrity Policy, approved by the Board of Trustees as Board Policy No. 709 on February 10, 2010, and published in the Student Handbook. Penalties for academic misconduct in this course may include a failing grade on an assignment, a failing grade in the course, or any other course-related sanction the instructor determines to be appropriate. Continued enrollment in this course affirms a student's acceptance of this university policy.

**Disabilities Statement** The University of Central Arkansas adheres to the requirements of the Americans with Disabilities Act. If you need an accommodation under this Act due to a disability, please contact the UCA Disability Resource Center, 450-3613.

**Building Emergency Plan** An Emergency Procedures Summary (EPS) for the building in which this class is held will be discussed during the first week of this course. EPS documents for most buildings on campus are available at <http://uca.edu/mysafety/bep/>. Every student should be familiar with emergency procedures for any campus building in which he/she spends time for classes or other purposes.

**Title IX Disclosure** If a student discloses an act of sexual harassment, discrimination, assault, or other sexual misconduct to a faculty member (as it relates to "student-on-student" or "employee-on-student"), the faculty member cannot maintain complete confidentiality and is required to report the act and may be required to reveal the names of the parties involved. Any allegations made by a student may or may not trigger an investigation. Each situation differs, and the obligation to conduct an investigation will depend on the specific set of circumstances. The determination to conduct an investigation will be made by the Title IX Coordinator. For further information, please visit: <https://uca.edu/titleix>. \*Disclosure of sexual misconduct by a third party who is not a student and/or employee is also required if the misconduct occurs when the third party is a participant in a university-sponsored program, event, or activity.

**Course Evaluations** Evaluations are kept completely confidential. Your thoughtful feedback is highly valued and cannot negatively or positively affect your course grade. Over the years this information has changed and improved the instruction of this course.

Student evaluations of a course and its professor are a crucial element in helping faculty achieve excellence in the classroom and the institution in demonstrating that students are gaining knowledge. Students may evaluate courses they are taking starting on the Monday of the thirteenth week of instruction through the end of finals week by logging in to myUCA and clicking on the Evals button in the top right.



2016-17 Student handbook



Laney Manion Hall  
Building emergency plan