# Intermediate Inorganic Chemistry, Chem 3360 Fall 2020

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

**Instructor**

Dr. Patrick Desrochers
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Email: patrickd@uca.edu

Web Page: accessible anywhere outside Blackboard
http://faculty.uca.edu/patrickd/chem3360/main3360.html
username = chem3360 password =

**Virtual Q&A (via Zoom)**

**Zoom drop in times: These will be determined based on class survey results.**
Other times by appointment (call or email). **Use this time.** It works best if you come prepared with specific questions about lecture or homework.

**Face-to-face**

For the health of all involved, I will not be meeting F2F unless absolutely necessary.

**Text**

*Descriptive Inorganic Chemistry* (5th 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 10, 8 am) | 20 | | | |
| TOTAL POSSIBLE | 100 | | YOUR TOTAL = | |

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**

Will be delivered via Blackboard. For many of the questions, written work will be requested. This can be provided by CLEAR and BRIGHT photos of handwritten work on paper or using a scanner or by using an e-stylus. Illegible written work will not receive credit. Quizzes are always announced at least one class period before.

**Literature Studies**

You will periodically be asked to peruse the current chemical literature (2020 articles 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, 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) specifically explaining how this article illustrates some of the current chemistry being discussed in lecture. **Consult website for an example.**

**Video Recordings**

- Prerecorded content videos. Watch these before virtual lecture discussions. These will be posted on Blackboard. They are designed to be used in addition to reading the assigned sections in the textbook. My prerecorded explanations are insufficient to satisfy all learning styles.
- Synchronous lectures will also be recorded and link to BB through the daily outline.

**Lecture time 8:00-9:15p**

I will show demos (at least videos), we will answer questions, clarify points and work LOTS of problems. I will also expand on ideas introduced in the prerecorded videos. I am looking forward to this time to be able to relax and work problems that apply what you learn from careful reading of the book and watching my recordings. You will also be broken into smaller groups to work problems together.

**Policies**

1. Attendance

People who miss classes typically do poorly in this course. Do not be one of these people. 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.**

**DO NOT risk this. As chair, I also sign these and have seen nearly every imaginable situation. These go on your permanent academic record, with the ramifications that go with it.**

University of Central Arkansas, Board Policy No. 709, adopted February 2010

## ACADEMIC INTEGRITY VIOLATION FORM

Instructor Desrochers Date _____

Department Chemistry & Biochemistry

Student _____ Student ID _____

Course:

CRN 10569 Fall 2020 Prefix & Course Number CHEM 3360

Course Title Intermediate Inorganic Chemistry

Alleged Violation:

Student used Chegg and other online tools to cheat on exam questions.
Student worked with classmates to answer exam questions.
Student copied answers from classmates and offered them as their own on quiz #4.

Explanation:

During a timed exam, the student posted a question from the exam on Chegg. Review of the student's webcam image shows their thumb over the webcam at exactly the same time the question was posted online on Chegg .

Course-Related Penalty:

Zero points on exam or quiz.
Failing grade for the course, despite previously earning solid B's on other exams.

Other Suggested Penalty (optional):

Negative recommendation for medical school, pharmacy school, nursing school (name the school). Why would a med-career trust this student to handle/administer narcotics if they cannot be trusted not to cheat on an exam or quiz in college.

_____ _____

INSTRUCTOR'S SIGNATURE DATE

_____ _____

DEPARTMENT CHAIR'S SIGNATURE DATE

_____ _____

GRADUATE DEAN'S SIGNATURE DATE

# Lecture and Exam Schedule

| Date | Topic refer to Daily Outline | Assigned reading | Practice Homework |
|---|---|---|---|
| Aug 20 | Atomic structure, e config, orbitals | Ch 1 | 1.1 – 2, 4 – 22 |
| 25 | Periodic table trends (r, IE, EA) | Ch 2 | 2.3, 5-6,9,11,12,17,19-22,27-28,30-33,37 |
| 27 | Thermodynamics | Ch 6 | 6.1 – 10, 22, 29, 35,36a,44 |
| Sep 1 | Oxid No.'s, bal. redox, $\Delta G = -nFE$ | Sec 8.1 – 8.8 | 8.3 – 8, 10 – 26, 36 |
| 3 | Hydrogen | Ch 10, Sec. 3.2 – 3.3 MO's, H econ p 122, p 191 – 192 | 3.3, 10.1, 3, 6-8, 10,11, 14, 18-21,27 |
| 8 | | | |
| 10 | **Exam 1—outside of class** | | |
| 15 | Ionic sphere packing, ionic survey | Sec 4.3 – 4.5, Ch 5 | 4.7, 9 – 12, 19, 5.2 – 11, 14,17,19-21,30 |
| 17 | Haber | Sec 6.1 – 6.3 | 6.13, 6.18 – 19, 6.22 – 24 |
| 22 | Li family | Ch 11, Sec. 9.1 – 9.4, p 197, p 203 | 11.1,3-4,7-8,11,16,17,20,25,27,9.9b, 9.15 |
| 24 | | | |
| 29 | Be family | Ch 12, Sec. 9.2 – 9.4, p 197, p 203, | 12.1– 6,9,11,15,16,18-19,22,28,30,9.8,10, 36 |
| Oct 1 | | | |
| 6 | **Exam 2—outside of class** | | |
| 8 | Covalent, shape, polarity | Sec 3.1, 3.6 – 3.12 | 3.11-24,27-34,41,42 |
| 13 | Boron family | Ch 13 | 1,2,7-14,18,19,22,24,25,29,32,35,39 |
| 15 | | | |
| 20 | Carbon family | Ch 14, Sec 8.1 – 8.8 | 14.1,5-8,11,12,14-18,22-27,29,30,33-37, |
| 22 | | | 43,45,49,50,52,53,56,58 |
| 27 | Nitrogen family | Ch 15, Sec. 3.2 – 3.4 MO's, | 15.1-5,7,8,11-19,22-31,33-35,38,42,43,46, |
| | | Sec 8.1 – 8.8 | 49,51,52,58,61-62 |
| 29 | | | |
| 3 | **Exam 3—outside of class** | | |
| 5 | Oxygen family | Ch 16, Sec. 3.2 – 3.4 MO's, | 16.1-4,10,11,13,14,16-18,21,27-29,31-34, |
| 10 | | Sec 8.1 – 8.8 | 36,38,40,41,46,47,50,53.54,66 |
| 12 | Fluorine family | Ch 17, Sec 8.1 – 8.8 | 3-5,8,10-12,14-17,19,21,22,24,25,30,31, |
| 17 | TM coord chem, ligands, $M^{n+}$, $d^n$ | Ch 19, Sec 7.4, 7.6-7.7 | 35-37,40,44,45,48,49,52,53 |
| 19 | CN 6, 5, 4 | | 19.1-7,13-20,22,25,26,28,29,33 |
| 24,26 | **THANKSGIVING BREAK** | | |
| Dec 1 | color and magnetism | | |
| 3 | | | |
| Dec 10 | **8:00 – 10:00 am Comprehensive Final Exam** | | |

# 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.

2020-21 Student handbook

Laney Manion Hall
Building emergency plan