

Chemistry 3711

Inorganic Chemistry 1

Fall 2018



Instructors: Dr. Bradley Wile
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Dr. Susan Bates
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 x 2341

Class Hours: Meyer 203
 M, W, F 12:00 pm to 12:50 pm

This is a 3 credit hour class, which does not include the laboratory (Chem 3751)

Office Hours: Meyer 265

M	1:00 pm	to	2:00 pm
T	10:00 am	to	11:00 am
W	1:00 pm	to	3:00 pm
F	2:00 pm	to	3:00 pm

Meyer 264

M	10:00 am	to	11:00 am
T	12:00 pm	to	1:00 pm
W	1:00 pm	to	2:00 pm
R, F	10:00 am	to	11:00 am

or other times (by appointment preferred)

Both Dr. Bates and Dr. Wile are often available throughout the day outside of regularly scheduled office hours. If the door is open and either of us is in the office, we are likely happy to meet with you. Occasionally, one of us will have meetings or research times that are not on the schedule posted outside our office doors, but we would be happy to find time to meet. If you need to speak with either of us outside of office hours, you may wish to make an appointment by email to ensure that we will be in the office when you plan to stop by. Since this course is broken into discrete sections, it is likely best to contact the instructor for a particular section first if you have a question pertaining to that material.

Course Materials: Descriptive Inorganic, Coordination, and Solid-State Chemistry, 3rd Edition by Glen E. Rodgers, Brooks/Cole, Cengage Learning: Belmont, CA, 2012.
 (ISBN 978-0-8400-6846-0)

In addition to the required text listed above, other reference material has been placed on reserve at the library. Drs. Wile and Bates will also supplement some areas of the lecture with handouts, or post material to Moodle. Students are encouraged to consult these resources when studying for quizzes and exams.

Attendance: By choosing to take this class, you have committed to attending class sessions every time they meet. If you must be absent from a class because of an illness, emergency or conflict with an approved University function, please contact an instructor as soon as possible, and arrange to get the notes from a classmate. A portion of your grade is determined by your attendance and participation at all class meetings.

Class Participation: You are expected to be an active and engaged participant in all class meetings and discussions. Please feel free to interrupt lecture if you have a question - you may think of class meetings as a discussion. Note that a portion of your grade is based on class participation!

Online Course Material: Some course material will be posted using the Moodle course management system. The course page can be accessed through the ONU portal (northernonline.onu.edu/my).

Academic Honesty: The University expects its students to conduct themselves in a dignified and honorable manner as mature members of the academic community and assumes that individually and collectively they will discourage acts of academic dishonesty. The University also expects cooperation among administrators, faculty, staff, and students in preventing acts of academic dishonesty, in detecting such acts, reporting them, and identifying those who commit them, and in providing appropriate punishment for offenders. The University Code of Academic Student Conduct is found in Appendix C of the Student Handbook: http://www.onu.edu/student_life/student_conduct/student_handbook

Failure to comply with these rules for academic conduct will result in a sanction that may include a failing grade for the assignment or for the course, at the instructors' discretion. All assignments to be turned in for a grade are to be your own work, unless it is clearly identified as a group assignment. Consulting work from previous students, even if not directly copying text constitutes plagiarism and is unacceptable in this or any other course. If you are uncertain whether a behavior may constitute academic dishonesty, it is likely a violation. Please come speak with your instructor if you have questions prior to any behavior that may seem questionable.

Students with Disabilities: ONU does not discriminate against qualified individuals with disabilities. Accordingly, the school will provide reasonable academic accommodations when the student provides sufficient documentation describing his or her disability and the accommodation(s) requested in accordance with school procedures. If you are eligible to receive an accommodation and would like to make a formal request for this course, please discuss it with me and allow *a minimum of two weeks advance notice*. Students requiring particular accommodations because of physical and/or learning disabilities should contact their Dean's office prior to or during the first week of classes. For additional information, see: http://www.onu.edu/student_life/disability_services

Cell Phone and Online Activity Policy: While you are in lecture, I expect you to be a fully engaged participant, rather than a passive observer. This means that no texting, emailing, or chatting (including Facebook, instant messaging, etc.) during the class session! This is exceptionally distracting for you (even if you don't realize it), not to mention your fellow students, and me.

If your phone rings, or you are engaged in a "digital distraction" during class, I reserve the right to move the offending technology from your immediate vicinity until the lecture has concluded.

Learning Objectives: By the end of this course at ONU, a student should be able to:

- Express an appreciation for the diversity of bonding throughout the periodic table, including descriptive chemistry of the elements.
- Demonstrate an understanding of the importance of 3-dimensional structure when considering coordination compounds.
- Describe crystal field theory, and relate the changes in orbital energy to changes in shape, oxidation number, and identity of ligands.
- Apply band theory to materials systems, metals, semiconductors, superconductors, and ceramics.
- Compare and contrast molecular, ionic, metallic, and network solids in terms of structure, characteristic properties, and energy considerations.
- Describe the role of mechanism in directing metal-centered reactivity.
- Recognize structural characteristics and properties of metal ions in biological systems.
- Describe the types of measurements and techniques that provide the foundation for inorganic theory.

Outline: The general outline for the course is below. The course is divided roughly in half, with nearly equal time devoted to coordination chemistry, and solid state and descriptive chemistry. Dr. Wile will serve as the primary instructor for most of the first portion (Coordination Chemistry), and Dr. Bates will serve as the primary instructor for most of the second portion (Solid State and Descriptive Chemistry).

 Coordination Chemistry

History, Introduction, & Nomenclature

Bonding and Structure in Coordination Compounds

Transformations of Inorganic Compounds

Applications of Coordination Chemistry

 Solid State and Descriptive Chemistry

Structure and Synthesis in the Solid State

Energy and Band Theory

Semiconductors and Materials

Representative Chemistry of the Elements

Bioinorganic Chemistry

Final Exam: The final exam is scheduled by the Registrar, and will be cumulative and comprehensive. The final exam is scheduled for 11:45 am to 1:45 pm Friday, Dec. 10, 2018.

Grading: Each quiz will count equally, with a total for all in-class assessments counting as one additional quiz. Approximate dates for quizzes and exams are provided below; these may change at the instructors' discretion, and will be discussed during the lecture.

Your grade for this course will be based on the following scheme:

		% Range	Letter
Quizzes (weeks 4, 7, & 11) and In-class assessments	20%		
Exam 1 (week 9)	20%	85% to 100%	A
Exam 2 (week 13)	20%	70% to 84%	B
Class Participation	5%	60% to 69%	C
Projects	5%	50% to 59%	D
Final Exam (12/10/2018)	30%	< 50%	F

Late Policy: All work must be submitted for grading by the stated due date (see Course Outline and Moodle if you are uncertain about any due dates). Late work will be docked a total of 5% of the raw score per day late (weekends count as one day). No work submitted after the last day of class will be graded.