

- Instructor:** Dr. K. Walters
SC 348
572-5315
walterske@nku.edu
<http://www.nku.edu/~walterske>
- Office Hours:** I have an open office policy, so stop by whenever you have a question (I will not always be in my office but will always indicate where I can be found or when I will return). My formal office hours are as follows: MWF 11:00-12:00, TR 2:00-3:00. Feel free to make an appointment for any other time. I will also schedule “online” office hours on Blackboard from time to time.
- Prerequisite:** C or better in CHE 310 (Organic Chemistry I) or equivalent
Corequisite: CHE 320L
- Objectives:**
1. Learn basic bonding theories and use these theories to account for the properties of inorganic compounds.
 2. Learn reaction pathways and predict the reaction products of inorganic compounds.
 3. Learn basic theories and properties of inorganic materials and bioinorganic chemistry.
- The Student:**
1. ...should always come to lecture on time.
 2. ...should review material from previous courses as needed to understand new topics.
 3. ...should stay *ahead* of the lecture in the textbook.
 4. ...should come to lecture already having read the anticipated material to be covered.
 5. ...should participate in lecture at every opportunity to demonstrate comprehension.
 6. ...should complete all assignments on time.
 7. ...should try to have at least a little fun learning inorganic chemistry.
- The Instructor:**
1. ...should always be on time for lecture and be prepared to teach.
 2. ...should present material in a clear, organized manner at a speed necessary to cover all topics.
 3. ...should encourage the student to think about the presented material creatively.
 4. ...should assign appropriate problems to help the student master the material.
 5. ...should prepare fair, thorough exams that cover the presented material.
 6. ...should be absolutely impartial in all matters grading.
 7. ...should have lots of fun teaching inorganic chemistry.
- Required Text:** *Introduction to Modern Inorganic Chemistry*, by MacKay, MacKay, and Henderson (6th Edition), Nelson-Thornes, 2002.
- Course Content:** The class will be broken into three sections: 1) Introduction/Group Theory; 2) Transition Metal Coordination Chemistry; and 3) Special Topics. This will require some skipping around in the text as profiled in the course online. Note that not all topics covered in the assigned chapters will be covered in lecture, and you will be responsible for only what is covered in lecture and assigned homework problems. For section 3, additional primary source readings may be assigned.
- Blackboard:** The NKU Blackboard website is used extensively in this course (<http://learnonline.nku.edu>). Course announcements, homework assignments (and their answers), grades, online supplementary materials, and discussion boards, are available *only* through the site, and you are responsible for all posted information. Take advantage of all the presented material (especially the discussion board), and please post questions to me on the discussion boards if possible rather than sending me email.
- Attendance:** Attendance is not taken in this course. You are all adults, so it is up to you to make the effort to attend or not. However, it will be very difficult to be successful in this course if you do not attend all lectures.
- Homework:** Problem sets will be assigned for each chapter, and will be posted online (along with their due date). You should use these assignments as an opportunity to test your comprehension of the presented material. Make sure that you hand in a **NEAT** copy of your problem set by the due date. Late homework assignments will receive a **50% penalty** if turned in within one day of the due date, and a **zero grade past one day late**.
- Seminars:** All students are **required** to attend at least two seminars during the term (attending additional seminars will result in extra credit). Qualifying seminars are provided by the NKU science departments, UC chemistry department, or NKU SAACS seminars. Appropriate documentation must be provided to indicate your attendance. Seminar attendance is counted as a portion of your homework grade. Should your schedule not permit you to attend seminars, arrangements can be made for additional writing assignments that will take longer to complete than attending the seminar in the first place...
- Studying:** It has been said that students should spend 2-3 hours studying for each hour of lecture. Science courses tend to err on the high side of this estimate, so you should commit yourself to studying **9-12 hours** each week during the course. Cramming the last night or two before exams will not be sufficient to comprehend the material.

Writing: Three short papers are required during the term. Each of the papers should summarize an article pertaining to some aspect of inorganic chemistry (articles must be provided to and receive the approval of the instructor at least **one week** prior to the due date). Articles should be selected from the appropriate journal listed below for each paper. Papers should be at least **three pages** long, **typed**, and an appropriate format (12 point font, 1 1/2 line spacing, 1" margins). Remember to check your spelling and grammar! You should include a cover page listing title, your name, and the reviewed article information. Papers will be submitted electronically through Blackboard. Your paper will be reviewed both by myself and a peer in the class. Participation in the peer review will be credited as a homework assignment.

Paper #1: Due 2/10, Article in *J. Chem. Ed.*, **2003 – 2005**.

Paper #2: Due 3/17, Article in *J. Am. Chem. Soc. or Inorg. Chem.*, **2003 – 2005**.

Paper #3: Due 4/21, Article in *Organometallics* or *Langmuir*, **2002 – 2004**.

Exams: There will be four exams (2/3, 3/3, 4/7, and 4/26) along with a comprehensive final (Wednesday 5/3 10:10 – 12:10) during the term. The purpose of these exams is to evaluate your ability to apply concepts, explain facts and theories, predict the outcomes of reactions, and to test your understanding of how reactions work together to produce a desired product. A significant portion of the exam material will be derived from your assigned homework problems. Normally there are **no makeup exams**, and a missed exam will be assigned a zero grade. Note further that these exams will normally be conducted outside of the normal class period, as they will take longer than one hour to complete. Arrangements will be made leading up to each exam date to provide for additional time.

Calculators: Programmable and graphing calculators are not permitted during exams. Calculators should be brought to class every day, as they may be needed during lecture examples. Under no circumstances may calculators be shared during exams, and the lack of an operable calculator will not excuse you from completing the problems! You should also **practice** with this calculator before you use it in an exam!

Other Notes:

- All items on this syllabus are subject to change by the instructor. Check the NKU Blackboard website regularly for updates.
- Students are responsible for reading and understanding all items on the syllabus. Any items not understood must be brought to the attention of the instructor within the first two weeks of class.
- The work you will do in any chemistry course (including this one) is subject to the Student Honor Code. The Honor Code is a commitment to the highest degree of ethical integrity in academic conduct, a commitment that, individually and collectively, the students of NKU will not lie, cheat, or plagiarize to gain an academic advantage over fellow students or avoid academic requirements. You should familiarize yourself with the Honor Code at the following website:
http://www.nku.edu/~deanstudents/student_rights/honor_code.htm
- Cheating will not be tolerated. In accordance with the Code of Student Rights and Responsibilities, faculty members have the right to determine actions to be taken when a student is caught cheating. In this course, cheating is grounds for immediate dismissal and an F course grade.
- Faculty members reserve the right to dismiss or to have removed a disruptive student from their classrooms.
- Cell phones, pagers, and all watch alarms should be turned off (or placed on silent) during class. Furthermore, cell phones and pagers must be put away during class (especially during quizzes and exams). Should you receive a phone call that you must answer, please quietly leave the lecture room to do so (do not abuse this privilege or it will be taken away). Should your device audibly ring during class, you will be asked to leave with no further discussion.
- No smelly, messy, or loud food is allowed in class. Violators will be asked to leave.

Grade Breakdown:

Homework (125 pts)	= 125 points
Papers (25 pts each)	= 75 points
4 Exams (150 pts. each)	= 600 points
Final Exam (200 pts.)	= 200 points
Total possible points	= 1000 points

<u>Point Total</u>	<u>Grade</u>
900 – 1000	A
800 – 899	B
700 – 799	C
600 – 699	D
0 – 599	F

Course Outline

- I. Introduction to Inorganic Chemistry (Weeks 1-5)
 - a. Chapter 1, Introduction
 - b. Chapter 2, The electronic structure and the properties of atoms
 - c. Chapter 3, Covalent molecules: diatomics
 - d. Chapter 4, Polyatomic covalent molecules
 - e. Chapter 7, Experimental methods
 - f. Chapter 8, General properties of the elements in relation to the periodic table
- II. Transition Metal Coordination Chemistry (Weeks 6-14)
 - a. Chapter 13, The transition metals: general properties and complexes
 - b. Chapter 14, The transition elements of the first series
 - c. Chapter 15, The elements of the second and third transition series
 - d. Chapter 16, Transition metals: selected topics
 - e. Chapter 11, The Scandium Group and the Lanthanides
 - f. Chapter 12, The Actinide Elements
- III. Special Topics (Weeks 14-16)
 - a. Chapter 20, Biological, medicinal and environmental inorganic chemistry
 - b. Nuclear chemistry (not in textbook, material provided)
 - c. Supramolecular chemistry (not in textbook, material provided)