

Creighton University
Inorganic Chemistry I, Chm 451
with Dr. Bruce Mattson
Fall Semester, 2014
Syllabus & Course Information

CATALOG DESCRIPTION:

Relation of atomic and molecular structure to chemical and physical properties. Periodicity and descriptive chemistry of inorganic classes and groups. Topics covered include symmetry, molecular orbital theory, molecular and ionic structures, redox reactions, acid/base theories, coordination compounds, organometallic chemistry. Prereq: CHM 341.

- 1. Introduction.** This course is designed for chemistry majors who have already taken Physical Chemistry, Chm 341. It is assumed that students recall principles of general chemistry. This syllabus contains course information that will be of use throughout the semester. All of the course policies are described herein. Please review its contents before the next class meeting. If you have further questions regarding the course organization and policies, please ask me. As your chemistry professor, I wish you success in the course. I am here to help you with your questions, problems or progress in the course.
- 2. Textbook and Accessories.** All of these materials are required for the course:
 1. Text: *Inorganic Chemistry*, by Miessler and Tarr, 5th Edition.
 2. Text II: A general chemistry text, preferably McMurry & Fay (I can loan you one)
 3. Simple scientific calculator
 4. Large loose-leaf binder for notes, handouts, homework, etc.
- 3. Office, e-Mail.** My office is Hixson 262; my e-Mail: brucemattson@creighton.edu
- 4. Homework.** I will distribute homework worksheets over each lecture topic – about one packet per lecture. These are guided problem sets and take the place of book assigned problems. These problems can/should be done with your inorganic study partner (isotope partner). Working problems is the single most important way to prepare for tests. Use my office hours to ask questions about these problems. Homework is assessed as part of your daily work (see next item).
- 5. Office Hours.** Office hours are those hours during which I am in my office (HL-262) and available for answering questions and discussing and studying chemistry. On my office door, I post a weekly schedule. I have several office hours daily, Monday – Thursday, and on most Fridays. Check my door to see if I am available. When my door is open, you are most welcomed to come in! If you prefer an appointment, sign up on my door for a time slot.
- 6. Course Content.** A day-by-day syllabus (calendar) is included with this information. Please note the dates for exams.
- 7. Learning Objectives.** You will be given learning objectives to guide your study at the beginning of each chapter.
- 8. Course website.** This course is supported by a website. The site includes all of the course information, copies of handouts, answers to some problems, old exams, etc. Link to it from mattson.creighton.edu

- 9. Exams.** Three exams will be given throughout the semester. The exams are based on the lecture material, assigned material from the text and the homework problems. You may be allowed to use a non-programmable calculator on the exams. You will be allowed to bring a periodic table (provided) with whatever notes you deem appropriate (call it a data sheet) to the exam. This data sheet may be used for Part 2 of each exam. The data sheet is not allowed on Part 1 of each exam. Exams are worth 100 points total. Exams will be returned as soon as possible after the exam date, often within 2 – 3 days.
- 10. Re-grading policy.** Grading appeals for an exam must be made to me within three school days of the date on which the exams are returned.
- 11. Nomenclature Skills.** You are required to know the names of the most important elements and chemical ions. In the case of ions, the correct charges are also to be memorized. Making a nomenclature mistake, including a mistake with a chemical formula, is worth 1.0 pt for each mistake. See Chapter 2 of McMurry & Fay to review nomenclature.
- 12. Final Exam.** The final exam is a multiple-choice exam produced by the American Chemical Society. You will be allowed to use a non-programmable calculator. Your percentage score on this exam will be determined by converting your raw score to its corresponding national percentile and then averaging this number with 100%. Thus, a score that ranks you at the 60th national percentile will give you 80% for your grade on the final exam.
- 13. E-Mail Grade Distribution.** Your grades will be distributed to you within three school days after each exam and after the final exam. I use e-mail to distribute course materials and your grades. If you do not want your grades to be e-mailed to you, please let me know in writing.
- 14. Grading.** This course is worth 400 points in total, distributed as follows:
- | | |
|--------------|-------------------|
| Exams 1 – 3: | 300 points |
| Final Exam | 100 points |
| Total | 400 points |

The grade you will be assigned can be determined as follows: A \geq 90.00%; B+ \geq 85.00%; B \geq 80.00%; C+ \geq 75.00%; C \geq 70.00%; D \geq 60.00%. Note: These are absolute cut-offs. The “curve” is never adjusted.

- 15. Cell phones and laptops.** Use of cell phones (calling, texting, checking messages) during class is not allowed. Cell phones must be left in backpacks, purse, etc. Laptops cannot be used in class. Penalty points apply.
- 16. Appealing the final grade.**
After I have determined your final grade, I do consider cases that are within 0.75% of the next cut-off (3 points). IF you are that close to the next better grade AND your score on the final exam is at least as good as the grade you desire, you will get the better grade. NO other cases will be considered in fairness to the class as a whole.*

* Example 1: Suppose you have an average of 79.5 after the four exams (including the final) and your score on the final was 82%. You will get a B for the final grade. Example 2: Suppose you have an average of 89.4 after the four exams (including the final) and your score on the final was 89%. You will get a B for the final grade. Example 3: Suppose you have an average of 79.2 after the four exams (including the final). You will get a C for the final grade, regardless of what you got on the final.

17. Academic Dishonesty. The University has an established policy on academic dishonesty. The University defines the term to include “representing the work of others to be one's own (cheating on an exam), tampering with the experiments of others, defacing or tampering with library or student materials or facilitating dishonesty on an exam.” The latter point is understood to include situations where you notice cheating occurring but do not report it immediately. In General Chemistry, the most blatant forms of academic dishonesty include: (a) copying the work of others on exams, (b) sharing information with others about exams (both during the exam or between class periods, (c) using notes when notes are not allowed (in calculator slip covers, palms of hands, baseball caps, slips of paper tucked away, and so on), (d) making changes on graded materials that have been returned to you, (e) working together on take-home exam problems when that is expressly forbidden, (f) cell phone photographing or texting exam information or answers, and so on.

As a member of the Creighton community, promise yourself and Creighton to join others in:

- ❖ *committing ourselves to the pursuit of knowledge throughout our lives and to developing the skills that we have been given.*
- ❖ *acknowledging our obligation to respect all women and men and to use wisely the resources of the world around us.*
- ❖ *solemnly promising to uphold the highest moral and ethical standards and thus to bring credit to the College by our life and our work.*

Any act of academic dishonesty tarnishes and diminishes the worth of each of these promises. Remember your promises. Keep your promises. Live up to your promises. Extend these promises into lifelong promises to yourself and others. You will not be disappointed.

In the event that you are accused of engaging in academic dishonesty, you will receive a “0” for the homework, exam or quiz score. The incident will be reported in writing in accordance with the protocol set forth by the College of Arts and Sciences. For details, see the website www.creighton.edu/ccas/ then follow links: Current Students > Student Policies. Students accused of academic dishonesty have the right to an appeal.

CHEMISTRY DEPARTMENT MISSION STATEMENT

The Department of Chemistry is committed to excellence in its programs. It works to help both its students and faculty discover their talents and abilities to the fullest, instilling critical and creative thinking. The Department specifically is committed to challenging its students to think and act as scientists and responsible citizens, by offering a diverse set of lecture courses and teaching approaches, as well as a significant amount of experience in laboratory work. The Department is also committed to offering its faculty the opportunity to grow as scholars and teachers. By their example and by presenting opportunities for such activity, the faculty members of the Department encourage students to participate in scholarly endeavors, especially independent research. We emphasize the values of trust, respect for others, and personal and professional integrity by acting in this way and by expecting our students to do the same.

Daily Plan - Chm 451 Dr. Mattson

August/September, 2014

| Monday | Tuesday | Wednesday | Thursday | Friday |
|---|-----------|--|-----------|-----------|
| | | 27 Day 1. Intro- duction; review gen. concepts | 28 | 20 |
| 1 Labor Day | 2 | 3 Day 2. Zeff, shielding, periodic properties | 4 | 5 |
| 8 Day 3. Simple Bonding, Lewis dots and VSEPR | 9 | 10 Day 4. Inter- molecular forces | 11 | 12 |
| 15 Day 5. Symmetry | 16 | 17 Day 6. Molecular Orbitals | 18 | 19 |
| 22 Day 7. Molecular Orbitals II | 23 | 24 Day 8. Molecular Orbitals III | 25 | 26 |
| 29 Exam 1 (Ch. 1 – 5) | 30 | | | |

October, 2014

| Monday | Tuesday | Wednesday | Thursday | Friday |
|---|-------------------------|---|-------------------------|------------------------------|
| | | 1 Day 9. Acids, Bases, etc. | 2 | 3 Day 10. Solids I |
| 6 Day 11. Solids II | 7 | 8 Day 12. Solids III | 9 | 10 |
| 13 Day 13. Descrip- tive Main Group Chemistry | 14 | 15 Day 14. Descrip- tive Main Group Chemistry | 16 | 17 |
| 20 F B | 21 A R | 22 L E | 23 L A | 24 K |
| 27 Day 15. Coord. Chem. I: Isomers | 28 | 29 Day 16. Coord. Chem. II: CFT | 30 | 31 |

November, 2014

| Monday | Tuesday | Wednesday | Thursday | Friday |
|--|-----------|---|---------------------------|--|
| 3 Day 17. Ligand Field Theory | 4 | 5 Exam 2 (Ch. 6 – 10) | 6 | 7 Day 18. Ligand Field Theory II |
| 10 Day 19. Coord. Chem. Spec I | 11 | 12 Day 20. Coord. Chem. Spec II | 13 | 14 |
| 17 Day 21. Coord. Chem reactions | 18 | 19 Day 22. Organometallic I | 20 | 21 |
| 24 no class | 25 | 26 Thanksgiving | 27 Thanksgiving | 28 Thanksgiving |

December, 2014

| Monday | Tuesday | Wednesday | Thursday | Friday |
|---------------------------------------|----------|--|--|-------------------------------|
| 1 Day 23. Organometallic II | 2 | 3 Day 24. Organometallic III | 4 | 5 |
| 8 Review | 9 | 10 Exam 3 (Ch. 11–14) | 11 Chem Club Christmas Party! | 12 Review for final |
| 15 Final 8 – 10 | | | | |