Creighton University

Inorganic Chemistry I, Chm 451 with Dr. Bruce Mattson Fall Semester, 2009

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 group theory, molecular orbital theory, molecular and ionic structures, redox reactions, acid/base theories, and coordination compounds. Prereq: CHM 341.

1. **Introduction.** This course is designed for chemistry majors who have already taken Physical Chemistry, Chm 341. It will be 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 take a few minutes sometime before the next class meeting to become familiar with its contents. 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, 3rd or 4th Edition.
   2. Text II: A general chemistry text, preferably McMurry & Fay.
   3. Simple scientific calculator
   4. Large loose-leaf binder for notes, handouts, homework, etc.

3. **Office, Phone, e-Mail.** My office is Hixson 262; my phone: (402) 280-2278; my e-Mail: brucemattson@bluejay.creighton.edu

4. **Attendance with Participation Policy.** *I require attendance with participation.* I feel that I have information that will be useful and interesting. I know that attending my lectures will help you on the exams. Attendance with participation is worth 100 points. Each lecture, up until Dead Week, is worth 5 points. You can miss two lectures and still receive 100 points (there are 22 lectures, not counting Day 1, prior to Dead Week.) I will not take attendance during Dead Week. Arriving late: If class has started, you will lose one point for being 0 -10 minutes late, -2 points for 10 – 20 minutes late, -3 points for 20 – 30 minutes late, -4 points for 30 – 40 minutes late and -5 points for more than 40 minutes late. Attendance without participation is the same as being absent. If you are working on another subject, sleeping or in any other way not engaged in the lecture/discussion, you are effectively not in attendance.

5. Homework. I will distribute worksheets over each lecture topic. These problems should be done with your inorganic study partner. I will collect your work on most Tuesdays. You and your partner can hand in one copy. Working problems is the single most important way to prepare for tests. Use my office hours to ask questions about these problems.

Important note regarding homework: In order to receive full credit for homework problems, you must:

(a) show all of your work in a clear and easy to understand fashion
(b) have the correct answer
(c) use legible penmanship that is not unusually small (I have old eyes), and
(d) box your answers.

6. Office Hours. Office hours are those hours during which I am in or near my office and available for answering questions, discussing studying, chemistry. Usually time is available throughout the day as well so that you may come to my office or call for an appointment. If you would like to come in groups, please do so. My office hours are:

Mondays: 9:30 – 11:00 and often available from 1 – 4 pm
Tuesdays: 11:00 – 12:30 and often available until 2:30
Wednesdays: 9:30 – 11:00
Thursdays: 11:00 – 12:30 and often available until 4 pm

I am frequently in my office between 8 AM and 4 PM. If the door is open, you may ask questions!

7. Course Content. A day-by-day syllabus (calendar) is included with this information. Please note the dates for quizzes and the final exam.

8. Learning Objectives. You will be given learning objectives to guide your study at the beginning of each chapter.

9. 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 http://mattson.creighton.edu/

10. 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 will be allowed to use a non-programmable calculator on the exams. You will also be allowed to bring a periodic table (provided) with whatever notes deem appropriate on it to the exam. Exams are worth 100 points each. Exams will be returned as soon as possible after the exam date, often within 2 – 3 days.

11. 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.

12. Nomenclature Skills. You are required to know the names of the most important elements and chemical ions.

13. 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.

14. 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.

15. Grading. This course is worth 600 points in total, distributed as follows:

Exams 1 - 3:	300 points
Homework:	100 points
Attendance and participation:	100 points
Final Exam	100 points
Total	**600 points**

The grade you will be assigned can be determined with the following chart. Note: These are the absolute cut-offs; there is no "rounding."

Grade Cut-offs:		
A+*	≥	95.00%
A	≥	90.00%
B+	≥	85.00%
B	≥	80.00%
C+	≥	75.00%
C	≥	70.00%
D	≥	60.00%

**The University does not acknowledge the "A+" as a grade. It will be recorded as an "A"*

16. Academic Dishonesty. The University has an established policy on academic dishonesty. The University defines the term to include, among other things, representing the work of others to be one's own (cheating on homework or an exam), defacing or tampering with library or student materials or facilitating dishonesty on homework or an exam." The latter point is understood to include situations where you notice cheating occurring but do not report it immediately. In Inorganic Chemistry, the most blatant forms of academic dishonesty include: (a) copying the work of others on homework, (b) using notes when notes are not allowed (in calculator slip covers, palms of hands, baseball caps, slips of paper tucked away, and so on), (c) making changes on graded materials that have been returned to you, (d) working together on take-home quiz/exam problems when that is expressly forbidden, and so on.

Please remember and think about from time to time, your promise to yourself and to Creighton that you made at the Matriculation Ceremony for new students

during Welcome Week. At this event, you signed your name on pages of the College Roll under the pledge:

As matriculated undergraduates in the Creighton College of Arts and Sciences, we recognize that admission to the College entails the following responsibilities, which we freely accept.

- *We commit ourselves to the pursuit of knowledge throughout our lives and to developing the skills that we have been given.*
- *We acknowledge our obligation to respect all women and men and to use wisely the resources of the world around us.*
- *We solemnly promise 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 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 http://puffin.creighton.edu/ccas/Students/students.html) 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, 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			26	**27** 1. Intro-duction; review gen chem. concepts	**28**	**29**
30	**31**					

September, 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1 2. effective nuclear charge, shielding, periodic properties HW#1 due	**2**	**3** 3. Simple Bonding, Lewis dots and VSEPR	**4**	**5**
6	**7**	**8** 3. Simple Bonding HW#2 due	**9**	**10** 4. Symmetry	**11**	**12**
13	**14**	**15** 5. Molecular Orbitals HW#3 due	**16**	**17** 5. Molecular Orbitals	**18**	**19**
20	**21**	**22** Exam 1	**23**	**24** 5. Molecular Orbitals	**25**	**26**
27	**28**	**29** 5. Molecular Orbitals HW#4 due	**30** .	 .		

October, 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1 6. Acids, Bases, etc	**2**	**3**
4	**5**	**6** 7. Solids HW#5 due	**7**	**8** 7. Solids	**9**	**10**
11	**12**	**13** 7. Solids HW#6 due	**14**	**15** 7. Solids	**16**	**17**
18 M	**19** I B	**20** D R	**21** T E	**22** E A	**23** R K	**24** M
25	**26**	**27** Review	**28**	**29** Exam 2 HW#7 due	**30**	**31**

November, 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	**2**	**3** 9. Coord Chem. I	**4**	**5** 10. Coord. Chem. II	**6**	**7**
8	**9**	**10** 10. Coord. Chem. II HW#8 due	**11**	**12** 10. Coord. Chem. II	**13**	**14**
15	**16**	**17** 11. Coord. Chem. III HW#9 due	**18**	**19** 11. Coord. Chem. III	**20**	**21**
22	**23**	**24** no class	**25**	**26** **Thanks-giving**	**27**	**28**
29	**30**					

December, 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1 Exam 3 HW#10 due	**2**	**3** 12. Inorg. reactions	**4**	**5**
6	**7**	**8** 13. Organo-metallic I	**9**	**10** 14. Organo-metallic II	**11**	**12**
13	**14** Final 1 – 3					