

INORGANIC CHEMISTRY I – CHM 205 Lecture

North Central College

Fall 2002, Brandt

Lecture: MWF, 12:00 - 1:10, SC 214.

Text (required): Rayner-Canham, G. *Descriptive Inorganic Chemistry*, 2nd Edition, W.H. Freeman, New York, 1999.

Instructor: Dr. Paul F. Brandt, SC 119, Phone 637-5193, (630) 357-0193(H),
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Office Hours: M 2 – 4, W 3 – 5, and Th 9 - 11 or stop by my open door at any time.

Course Description: This course contains the descriptive chemistry of inorganic compounds. We will study principles from general chemistry to understand the reason for the reactivity of the elements. The chemistry of the elements and their importance to industry and biological systems will be explored.

Course Aim: We will delve more deeply into topics from General Chemistry (and some that were not touched on at all). In doing so, it is expected that you will gain an appreciation for the complexity and the order behind the periodic table. Throughout the labs and the course you will be expected to assemble information in order to explain the trends and then rationalize the exceptions as well.

Tentative Lecture Schedule

<u>Dates</u>	<u>Chapter #</u>	<u>Chapter Topics</u>
Sept 16	2	An Overview of the Periodic Table
Sept 18	3	Covalent Bonding
Sept 20	4	Metallic Bonding
Sept 23	5	Ionic Bonding
Sept 25 and 27	6	Inorganic Thermodynamics
Sept 30 and Oct 2	8	Acids and Bases
Oct 4, 7, and 9	9	Oxidation and Reduction
Oct 11		Hour Exam #1
Oct 14	7	Hydrogen
Oct 16	10	The Group 1 Elements: The Alkali Metals
Oct 18		Day of reflection
Oct 21	11	The Group 2 Elements: The Alkaline Earth Metals
Oct 23	12	The Group 13 Elements
Oct 25	13	The Group 14 Elements
Oct 28 and 30	14	The Group 15 Elements
Nov 1		Hour Exam #2
Nov 4	15	The Group 16 Elements
Nov 6	16	The Group 17 Elements
Nov 8	17	The Group 18 Elements
Nov 11	18	Introduction to Transition Metal Complexes
Nov 13 and 15	19	Properties of the Transition Metals
Nov 18	20	The Group 12 Elements
Nov 20		Review
Nov 22		Hour Exam #3
Nov 27	10:00 – 11:50 am	Final Exam

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Evaluation:

3 Hourly Exams @ 100	= 300 points
Quizzes	= 100 points
Final Exam	= 200 points
Lab	= <u>150 points</u>
Total	= 750 points

Guaranteed Grades

A- (90%)

B- (80%)

C- (70%)

D- (60%)

You must pass the lab in order to pass the course!

I will be grading on the +/- system. Typically I break the grades down into A, B, C, D and then subdivide into + and – once I have determined where you stand among your peers.

Homework:

While reading the chapter you should attempt to do all of the chapter-problems without looking at the answers that are found at the reference desk in the library. It is imperative that you work as many of the assigned problems as you possibly can, as this is what most quizzes and exams will be based on. It is also important to stay current when studying Chemistry because we will be constantly building on the principles just learned. Falling behind by a single day can be detrimental. For this reason, try to do all the problems assigned for that day, and if possible, try to read the next days material in the text.

Quizzes:

I have found in the past that this course requires that students keep up to date. I recognize that this can be hard to do in some cases, so rather than spend time in lecture on them, I will have quizzes at the beginning of each lab that will be based on the lecture material.

Academic Dishonesty: I have found that the laboratory write-ups are notoriously bad in this area. You will be working with a partner and undoubtedly will have the same data as your partner. You should discuss the questions to the lab with your partner, and if need be other students in the class. However, at some point you need to write the lab up and hopefully this is where you use your own voice. You need to explain the answers in your own terms that make sense to you. You cannot simply rewrite what someone else has said. If this is not clear to you, please consult with me to be certain. The school policy is stated below and unfortunately I have had to use it numerous times.

Any instructor who has assembled evidence of plagiarism will first offer the student a chance to provide an alternate explanation of the evidence or to admit fault. If the inference of plagiarism remains, the instructor may choose one of these options, listed in order of increased severity according to the extent and evident deliberateness of the deceit. The first two options suppose that the plagiarism is not extensive, that it would not have given the student substantial academic advantage such as full course credit or high course grade, or that the instructor has clear reasons to believe that the plagiarism can be accounted for by ignorance, which, though subject to discipline, is genuine.

- 1. Reprimanding the student and requiring either a revision of the work or an additional paper or exam.*
- 2. Lowering the grade for the paper or exam (even as far as F) without opportunity to regain the lost credit.*

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The remaining three options come into play if the plagiarism is extensive, if it gave the student substantial academic advantage, or if the student had previously been warned against it.

3. *Directed withdrawal of the student from the course.*
4. *Failure of the student for the course.*
5. *Referral of evidence to the dean of faculty for appropriate disciplinary action (which may go so far as suspension or dismissal).*

Any sanction beyond 1) will be reported to the Dean of Faculty for notation in the student's file. The record of past plagiarism for a given student may affect the disposition of any new case. No notation will appear on the student's permanent transcript, nor will any notation be sent off campus with the student's records.

Some of you may wonder what constitutes plagiarism:

- *Copying others, even fellow students, words, phrases, or sentences without proper documentation (quotation marks and a citation). A quote of more than two or three consecutive words requires quotation marks.*
- *Summarizing others ideas without proper documentation (citation).*

A first offense will result in your score being cut in half. The second offense will result in an F in the course.

Link with BIO 200 – Cellular Biology (Spring 2003)

Each of you will be required to have a set of “linked” courses before graduation – the *Interdisciplinary Requirement*. CHM 205 and BIO 200 have been established as linked courses this year. If you are planning to do so, you must sign up for IDS 200 during the term in which you will be evaluated. We expect that you will not be able to complete the link until you have had some experience in BIO 200 in the Spring term and so this is when you should sign up for IDS 200.

Most students fail to realize the important connections between inorganic chemistry and biology. There is a perception that inorganic molecules and elements are part of the physical world, but insignificant to living organisms. Because life oftentimes uses inorganic atoms in the molecule (particularly metalloenzymes), we will expect you to do a literature review of a particular system or perform a laboratory illustrating a system that involves an inorganic chemistry aspect to a biological system. Both Drs. Johnston and Brandt will read and evaluate the resulting papers/reports. We expect that satisfactory papers/reports will utilize both chemical and biological perspectives to address the importance of an element/system to the world.

Should you decide to forego this opportunity for an interdisciplinary requirement, the requirement may also be attained by completing the History of Ideas minor, a student initiated link, or completion of a Study Abroad program among others (see the *General Education Curriculum* in your *Undergraduate Catalog*).