

**COURSE SYLLABUS**  
**CHM 2260: ELEMENTARY INORGANIC CHEMISTRY**  
**FALL 2011**

**Instructor:** Dr. Mark R. McClure

**Email:** [mark.mcclure@uncp.edu](mailto:mark.mcclure@uncp.edu) (preferred method of contact)

**Office Phone:** 522-5706

**Course Meeting Times:**

MWF 11:15-12:05 SCI 3231

MW 1:15 - 4:15 SCI 3105

**Office:** SCI 3217

**Office Hours:**

MTWRF 10:00 – 11:00

**Textbook:**

“Elementary Inorganic Chemistry” by Mark McClure (available in the bookstore as a course packet).

**Grading:**

Your final grade will be the average of (1) three in-class exams (two one-hour exams and a comprehensive final exam), (2) a quiz average, and (3) a laboratory average. These will be weighed equally; therefore each will count as 20% of your grade. Letter-grades will be assigned as shown below.

67	68	69	<b>D+</b>	77	78	79	<b>C+</b>	87	88	89	<b>B+</b>				
63	64	65	<b>D</b>	73	74	75	<b>C</b>	83	84	84	<b>B</b>	93-100	<b>A</b>		
60	61	62	<b>D-</b>	70	71	72	<b>C-</b>	80	81	82	<b>B-</b>	90	91	92	<b>A-</b>

You should expect 8-10 quizzes over the course of the semester. These will cover the assigned readings and lecture notes and may or may not be announced. I will drop your lowest quiz grade at the end of the semester. If you miss a quiz for any reason, that will be the quiz that is dropped.

The book has a series of questions at the end of each chapter. Unless otherwise indicated, you may assume that all of the questions at the end of each chapter are assigned. Quiz questions may be very similar to these end-of-chapter questions.

**Course Prerequisites:**

To be enrolled in this course you MUST have completed CHM 1310 (general chemistry II) and CHM 1110 (general chemistry II lab.)

**Course Description and Goals:**

The purpose of this course is to introduce students to the field of inorganic chemistry. Inorganic chemistry is a very broad field, and this is reflected in the topics to be covered. These include (1) the properties of transition metals and transition metal complexes, (2) the descriptive chemistry of the alkali

metals, alkaline earth metals, carbon, hydrogen, and oxygen, and (3) ionic bonding and the structure of ionic solids.

**Religious Holiday Policy:**

A copy of UNCP's religious holiday policy can be found at the following location:

[http://www.uncp.edu/chem\\_phy/religiousholidaypolicy.pdf](http://www.uncp.edu/chem_phy/religiousholidaypolicy.pdf)

**Disability Policy:**

Any student with a documented learning, physical, chronic health, psychological, visual or hearing disability needing academic adjustments is requested to speak directly to Disability Support Services and the instructor, as early in the semester (preferably within the first week) as possible. All discussions will remain confidential. Please contact Disability Support Services, DF Lowry Building, Room 103 or call 910-521-6695.

**Attendance and Conduct Policy:**

1. You are expected to regularly attend both the lecture and laboratory portions of the class. No make-ups will be given for missed assignments. If you miss class for a legitimate reason (such a serious illness) the missed work will not be counted against you. However, you should be prepared to present written documentation regarding your absence, and you must do so within one week of your absence.
2. You should make every attempt to come to class on time. It is very distracting to the instructor and to other class members to have students coming to class late. If you do arrive late, please take a seat near the door so that the distraction is minimized. You will not be given extra time on quizzes because you have arrived late.
3. Please do not ask to take an exam late or early because of work schedules or vacation plans. The official university holidays are scheduled well in advance and are listed in this syllabus.
4. Cell phones should be switched off and put away in class. Leaving class to initiate cell phone conversations during class is unacceptable. Text messaging in class is unacceptable. The first time you are asked to put your cell phone away you will receive a warning; the second time you will receive a zero on your next quiz grade.

**Course Web Page:**

You can find a number of course-related materials on my web page. These include the following:

1. The laboratory experiments (discussed in laboratory portion of syllabus)
2. The "raytracing gallery" contains visualizations of many of the lattice structures discussed in this course. Many of these images are linked to animations. The animations require no special software or plug-ins to be viewed.
3. The interactive periodic table briefly covers the descriptive chemistry of many main-group elements and transition metals. Many of the same photos in your book also appear in these sections.

4. The “instructional videos” section contains links to several videos that cover topics discussed in this course. The “chemical reaction videos” section contains links to videos of chemical reactions, some of which are discussed in this course.

### **Lecture Schedule:**

A copy of the class schedule is shown on the following pages. This is a *tentative* schedule, which means that I may progress more slowly or more quickly depending upon the performance of the class.

W August	17	Chapter 1: Atomic Structure and Chemical Periodicity
F August	19	Chapter 1: Atomic Structure and Chemical Periodicity
M August	22	Chapter 1: Atomic Structure and Chemical Periodicity
W August	24	Chapter 2: Overview of Covalent Bonding Concepts
F August	26	Chapter 2: Overview of Covalent Bonding Concepts
M August	29	Chapter 2: Overview of Covalent Bonding Concepts
W August	31	Chapter 4: Oxidation-Reduction Reactions and Electrochemistry
F September	02	Chapter 4: Oxidation-Reduction Reactions and Electrochemistry
M September	05	<b>Labor Day Holiday</b>
W September	07	Chapter 18: Coordination Chemistry
F September	09	Chapter 18: Coordination Chemistry
M September	12	Chapter 18: Coordination Chemistry
W September	14	Chapter 18: Coordination Chemistry
F September	16	Chapter 19: Crystal Field Theory
M September	19	Chapter 19: Crystal Field Theory
W September	21	Chapter 19: Crystal Field Theory
F September	23	Chapter 19: Crystal Field Theory
M September	26	Chapter 20: Chemistry of the Transition Elements
W September	28	Chapter 20: Chemistry of the Transition Elements
F September	30	Chapter 20: Chemistry of the Transition Elements
M October	03	Chapter 20: Chemistry of the Transition Elements
W October	05	Chapter 20: Chemistry of the Transition Elements
F October	07	Chapter 21: Organometallic Chemistry
M October	10	Chapter 21: Organometallic Chemistry
W October	12	<b>EXAM 1</b>
F October	14	<b>Fall Break – No Class</b>
M October	17	Chapter 7: Hydrogen
W October	19	Chapter 7: Hydrogen
F October	21	Chapter 8: Alkali Metals

M	October	24	Chapter 8: Alkali Metals
W	October	26	Chapter 9: Alkaline Earth Metals
F	October	28	Chapter 9: Alkaline Earth Metals
M	October	31	Chapter 10: Carbon
W	November	02	Chapter 10: Carbon
F	November	04	Chapter 10: Carbon
M	November	07	Chapter 12: Nitrogen
W	November	09	Chapter 12: Nitrogen
F	November	11	Chapter 12: Nitrogen
M	November	14	Chapter 5: Ionic Structures
W	November	16	Chapter 5: Ionic Structures
F	November	18	Chapter 5: Ionic Structures
M	November	21	Chapter 5: Ionic Structures
W	November	23	<b>Thanksgiving Holiday</b>
F	November	25	<b>Thanksgiving Holiday</b>
M	November	28	Chapter 6: Ionic Bonding
W	November	30	Chapter 6: Ionic Bonding
F	December	02	<b>Exam 2</b>

**Final Exam:** Friday, December 9 8:00-10:30 AM

### **Laboratory Course:**

To be enrolled in the lecture course, you must also be enrolled in one of the two laboratory sections (Monday or Wednesday, 1:15 – 4:15). No exceptions to this rule will be made under any circumstances. Furthermore, you are expected to attend the section in which you are enrolled for the duration of the semester.

The laboratory experiments are available for download off the course web page, <http://www.uncp.edu/home/mcclurem/courses/chm226/chm226.html>. They are in Adobe Acrobat format, so you will need the Acrobat reader in order to view them. This is a free program, and if you do not have it you can download it from Adobe's web site.

Each experiment should be printed and brought with you to lab. These should be printed on ***standard white typing paper***. Lab pages printed on colored, lined, or previously used paper (already printed on one side) will not be accepted.

Most labs contain a pre-laboratory assignment, which is due ***at the beginning*** of each lab period. In-laboratory and post-laboratory assignments are due at the end of the period unless otherwise specified. All work should be done in the spaces provided; attached sheets will not be graded. Several of the laboratories are performed over two or more weeks and the pre-laboratory and in-laboratory assignments are divided into multiple parts. In such cases, only the pre-laboratory and in-laboratory associated with the part of the experiment performed that week are due.

Most of the pre-laboratory assignments require you to look up information about the chemicals you will be working with in the laboratory. There are several places to look for this information; the *CRC Handbook of Chemistry and Physics* and the *Merck Index* are two good sources. You may also wish to search the web for material and safety data sheets, which list chemical and physical properties, as well as hazards, associated with many chemicals. A particularly good site can be found at <http://physchem.ox.ac.uk/MSDS/#MSDS>.

### **Laboratory Safety and Conduct Policies:**

1. You are **required** to purchase a pair of chemical splash goggles (available at the bookstore) for this course; safety glasses are not an acceptable substitute and the department will no longer supply goggles. You are required to wear goggles at all times while working in the laboratory.
2. You should come to laboratory in appropriate laboratory attire. This includes close-toed shoes, long pants or skirt, and long or short-sleeved shirt. ***You will not be allowed to work in laboratory in shorts, sandals, tank tops, or sleeveless shirts.***
3. You should not bring any food or drink into the laboratory.
4. Unless otherwise instructed, all work in the laboratory is to be done individually. ***Laboratory assignments are not a group effort.***
5. You should not engage in any kind of horseplay or other boisterous behavior while in the laboratory.
6. Any spilled chemicals should be cleaned up immediately. This includes dry chemicals spilled on or inside the balances during weighing.
7. Wipe down your workspace at the end of every period and return all equipment to the appropriate place (either your drawer or one of the glassware cabinets). You are responsible for the contents of your drawer for the course of the semester; several items were purchased especially for inorganic and there may not be replacements for these items.

***Failure to comply with the above policies may result in the deduction of points from your laboratory grade.***

### **Laboratory Schedule:**

W August	17	<b>No Meeting</b>
M August	22	Atomic Spectrum of Hydrogen
W August	24	Atomic Spectrum of Hydrogen
M August	29	Check-in, Electrochemical synthesis of potassium persulfate – part 1
W August	31	Check-in, Electrochemical synthesis of potassium persulfate – part 1

M	September	05	<b>Labor Day Holiday</b>
W	September	07	Electrochemical synthesis of potassium persulfate – part 2
M	September	12	Electrochemical synthesis of potassium persulfate – part 2
W	September	14	Electrochemical synthesis of potassium persulfate – part 3
M	September	19	Electrochemical synthesis of potassium persulfate – part 3
W	September	22	Isomerism in Coordination Chemistry (“dry” laboratory)
M	September	26	Isomerism in Coordination Chemistry (“dry” laboratory)
W	September	28	Introduction to Coordination Chemistry
M	October	03	Introduction to Coordination Chemistry
W	October	05	Synthesis and Titration of a Copper salt
M	October	10	Synthesis and Titration of a Copper salt
W	October	12	Visible Absorption Spectroscopy of Cobalt Complexes
M	October	17	Visible Absorption Spectroscopy of Cobalt Complexes
W	October	19	Synthesis and Characterization of Cobalt(III) complexes – part 1
M	October	24	Synthesis and Characterization of Cobalt(III) complexes – part 1
W	October	26	Synthesis and Characterization of Cobalt(III) complexes – part 2
M	October	31	Synthesis and Characterization of Cobalt(III) complexes – part 2
W	November	02	Identification of a Salt Unknown
M	November	07	Identification of a Salt Unknown
W	November	09	Qualitative Analysis of a Mixture of Metal Ions
M	November	14	Qualitative Analysis of a Mixture of Metal Ions
W	November	16	Ionic Lattices (“dry” laboratory)
M	November	21	Ionic Lattices (“dry” laboratory)
W	November	23	<b>Thanksgiving Holiday</b>
M	November	28	<b>No Meeting</b>
W	November	30	<b>No Meeting</b>