Winter 2003 Chemistry 222 *with* Dr. Michael A. Russell

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Office Hours: **MWF** 8-9 **MW** 10-11 *By Appointment:* **Th** 1-4
Chemistry 222 Website: **http://classes.mhcc.edu/enh/ch222_mr**

Required Materials:

Chemistry & Chemical Reactivity (5th Edition) by Kotz and Treichel
Chemistry 222 Lab Manual
Chemistry 222 PowerPoint and Lecture Notes
Graphing calculator (such as the TI-82, TI-83, etc.)
Bound Laboratory Notebook
Scantron Sheets for exams ("Test Form 8000" or "Form No. 882-ES" only)
Safety goggles for lab

Course Objectives: This course offers the fundamental basics of chemistry for science, pre-professional, and chemical engineering majors. A strong emphasis is placed on a mathematical approach. CH 222 covers bonding and molecular orbitals; gases, liquids and solids; solution chemistry; kinetics; and nuclear chemistry.

Prerequisites: A C or better in CH 221.

Course Philosophy: To be successful, students enrolled in a 200 level chemistry course should complete all assignments before coming to class, attend classes regularly, participate in discussions, and think critically to discover the fundamental theories inherent to this course. All homework assignments represent the *minimum* requirement for understanding the principles of chemistry. It is assumed that A and B students will perform enough *unassigned* exercises to master the concepts.

The Honor Principle: All students will be expected to behave with the highest moral and academic integrity while enrolled in this class. Plagiarism, cheating or sharing information on tests or laboratory reports, disruptive behavior, and other related offenses will be dealt with according to the directives stated in the current *Mt. Hood Community College Student Guide*.

Grading:

Midterm Exams (2 total, 130 points each)	260 points
Quizzes (6 total, lowest quiz dropped, 20 points each)	100 points
Lecture Final Exam	180 points
Laboratory Final Exam	100 points
Class Presentation	100 points
Problem sets (6 total, 10 points each)	60 points
Nine lab experiments (20 points each)	180 points
Lab Completion Bonus and Notebook	20 points
Total points:	**1000** points

Tentative grading distribution: **A**: 90-100% **B**: 79-89% **C**: 65-78% **D**: 55-64% **F**: less than 55%
Opportunities for extra credit are available and explained in the "Extra-Credit Guide" handout.

Exams and Quizzes will be held in the recitation portion of lab. No make-up quizzes will be given. If you need to miss an exam due to illness or personal emergency, call and leave a message to assure a make-up exam. Failure to call results in a failed exam.

Each student will give a **Class Presentation** this term. For more information, see the handout entitled "Class Presentations FAQ".

In the **Laboratory**, chemistry safety goggles must be worn at all times. You are required to record all data, observations, and calculations in the required notebook. The balance room must be kept clean at all times; the equipment is expensive and easy to damage, and a messy balance may result in a class-wide point penalty.

Lab reports must be **typed**; hand-written labs will suffer a point penalty. They must include your **name**, **date**, **title** of lab, **partner's name(s)**, the **purpose** of the lab, any **data, graphs or observations** relevant to the lab (i.e. color changes, formation of gas, tables of measurements, etc. - be sure to include units!) and any **conclusions** which answer the purpose. If the lab contains **postlab questions**, include answers for them as well. Where relevant, be sure to include the following in the data section: **averaged values**, **% error**, **standard deviation**, **parts per thousand**, etc. All labs must have the correct number of **significant figures** and **units**.

Make-up labs must be completed within one week of the original lab with your instructor's approval. **Late Lab Reports** must be turned in within one week of the scheduled due date. Labs turned in up to one week late are worth half credit; no credit will be given after one week. If you are absent, you must call and leave a message on the scheduled day or your report will be considered late. Students turning in all 9 lab reports by the last day of lecture will receive a 20 point **lab completion bonus**; failure to turn in even one lab forfeits the entire lab completion bonus.

Problem Sets: Problem sets are to be completed before recitation begins. Problems should include your name, the problem assignment, the setup for the problem (with units), and a circled final answer. Late problem sets will suffer a point penalty.

Week	Dates	Lab Assignment
1	1/7 & 1/8	*Begin* "Titration of Water Soluble Copper Salts" *and* "Linear Regression" *Labs* *Also:* Internet Signup
2	1/14 & 1/15	*Begin* "The Geometrical Structure of Covalent Molecules" *Lab* *Due:* Problem set #1 *Chapter 9:* 29, 37, 39, 45, 47, 51, 55, 61, 69, 73, 75, 77, 79, 85, 87 *Labs due:* "Titration of Water Soluble Copper Salts" *and* "Linear Regression" (Lab #1) *Take* Quiz #1
3	1/21 & 1/22	*Begin* "Valence Bond and Molecular Orbitals Lab" *Lab* *Due:* Problem set #2 *Chapter 10:* 19, 23, 25, 27, 33, 35, 37, 39, 43, 51, 57, 61, 63 *Lab Due:* "The Geometrical Structure of Covalent Molecules" (Lab #2) *Take* Quiz #2
4	1/28 & 1/29	*Begin* "Organic Chemistry" *Lab* *Due:* Problem set #3 *Chapter 11:* 17, 21, 23, 31, 33, 35, 37, 39, 41, 47, 49, 53, 55, 57, 59, 75 *Lab Due:* "Valence Bond and Molecular Orbitals Lab" (Lab #3) *Take* Quiz #3
5	2/4 & 2/5	**EXAM #1** - *Chapters 9, 10 & 11* *Begin* "Molar Mass Determination of a Volatile Liquid" *Lab* *Lab Due:* "Organic Chemistry" (Lab #4)
6	2/11 & 2/12	*Begin* "Determination of R: The Gas-Law Constant" *Lab* *Due:* Problem set #4 *Chapter 12:* 15, 17, 29, 33, 35, 37, 41, 47, 51, 55, 56, 75, 87 *and* *Chapter 13:* 17, 19, 21, 25 *Lab due:* "Molar Mass Determination of a Volatile Liquid" (Lab #5) *Take* Quiz #4
7	2/18 & 2/19	*Begin* "Molar Mass Determination by Freezing Point Depression" *Lab* *Due:* Problem set #5 *Chapter 13:* 27, 33, 39, 47, 49, 63, 77 *and* *Chapter 14:* 19, 21, 25, 29, 33, 39, 41, 47, 51, 55, 59, 65, 67 *Lab due:* "Determination of R: The Gas-Law Constant" (Lab #6) *Take* Quiz #5
8	2/25 & 2/26	**EXAM #2** - *Chapters 12, 13 & 14* *Begin* "The Iodination of Acetone (Part I)" *Lab* *Lab Due:* "Molar Mass Determination by Freezing Point Depression" (Lab #7)
9	3/4 & 3/5	**CLASS PRESENTATIONS** - *paper due at presentation* *Lab due:* "The Iodination of Acetone (Part I)" (Lab #8)
10	3/11 & 3/12	*Begin* "The Iodination of Acetone (Part II)" *Lab* *Due:* Problem set #6 *Chapter 15:* 17, 19, 23, 25, 31, 33, 39, 49, 57, 59, 61, 63 *and* *Chapter 23:* 13, 17, 19, 21, 25, 31, 39, 49 *Take* Quiz #6 *Lab due:* "The Iodination of Acetone (Part II)" (Lab #9)
11	3/18 3/19	**LAB FINAL** *Times to be announced - Lab Notebook due* **LECTURE FINAL** *(7:45 AM, AC 1303)*