Chemistry 22: Fall 2012

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Office Hours: By appointment only.

Class Times: Lecture Saturday: 8:30 – 11:20 a.m. in Mer22
Discussion Section: 12:30 -1:45 p.m. in Mer22
Laboratory: 2 – 5:05 p.m. in Mer23

Course Description: This is a 5 unit introductory course covering basic principles of chemistry more descriptive than quantitative in emphasis. Topics include atomic structure, trends in the periodic table, the three states of matter (gas, liquid and solid), energy, chemical bonding in ionic and molecular compounds, nomenclature, measurement and the metric system, mole concept and stoichiometry, chemical reactions and equations, solutions, acids, bases, salts, electrolyte systems, equilibrium and nuclear chemistry.

Student Learning Outcomes:

I. Students will be able to classify matter correctly.
   a. Explain the difference between a solid, liquid and gas.
   b. Examine and classify matter and name the common elements from the periodic table.
   c. Understand chemical and physical properties.

II. Students will be able to use common laboratory equipment correctly and report measurements to the correct significant figures with proper units. Equipment includes Bunsen burners, beakers, graduated cylinders, thermometers, top loading balances, rulers and burets.
   a. Use dimensional analysis for problem solving, and show answers with correct units and with the correct significant figures.
   b. Use a Bunsen burner, balance and common laboratory glassware.
   c. Execute laboratory procedures safely and confidently.
   d. Be able to measure temperature, mass, length, volume, and density using lab equipment.
   e. Be able to perform laboratory calculations such as percent mass, titrations balancing, percent error etc.

III. Students will be able to represent chemical changes correctly through balanced chemical equations with proper formulas for elements and compounds.
   a. Explain atomic theory, atomic structure, and the concept of isotopes, and be able to represent different isotopes using correct chemical symbols.
   b. Use the periodic table to determine electron configuration, assign oxidation numbers and compare elements based on periodic trends (electronegativity, electron affinity, atomic radius, etc.).
   c. Name ionic and molecular compounds, and name hydrocarbons with as many as 10 carbons in the longest chain.
   d. Use the concept of the mole and Avogadro's number in stoichiometry.

IV. Students will understand solutions and be able to prepare a solution in the lab.
   a. Define acids, bases and salts and know what components of a solution will make a buffer.
   b. Draw Lewis structures, determine if a molecule is polar or non-polar, and analyze for intermolecular forces of attraction and solubility.
   c. Explain principles of precipitation.
   d. Know how to prepare a solution in units such as molarity, % w/v, and % w/w.
   e. Understand solution conductivity.

Prerequisites: Math 121 with a "C" or better grade. Higher algebra skills and some level of competency in college level English would be helpful.

Required Materials:

- Hein, Pattison, Arena, Best; Introduction To General, Organic & Biochemistry, 9th Ed; Wiley, 2009.
- Laboratory Manual for Chemistry 22 updated Jan 2011 (on the web)
- Scientific Calculator, (with log, e^x, 10^x, and scientific notation)
- Safety goggles or safety glasses with "Z87" safety stamp

Grading Policy: 50% of the grade is from the Class
20% of the grade is from Discussion Section
30% of the grade is from the Lab

500 points are possible.

500-450 = A
449-400 = B
400-310 = C
309-250 = D
249-below = F

No + or – grades are awarded due to school policy.

Tests will have fill in the blank, multiple choice, and chemistry word problems.

Quizzes will typically be multiple choice with a few notable exceptions.

Class:	**Midterm**	**100**
	Final (50% of material)	**150**
Discuss:	**Homework/Participation (5 pts each)**	**50**
	Quizzes (5 points each)	**50**
Lab	**Lab Reports (15 points each)**	**150**

- **Homework:** Reading assignments, book assignments:
  - Reading Assignments: You are expected to read the appropriate chapters ***before*** coming to class. You will gain more from the lectures if you come prepared. I will occasionally include relevant websites to supplement reading assignments.
  - Book Assignments: Homework assignments are given in the tentative schedule on the website. It is the student's responsibility to do the homework. You will find it difficult to succeed in this class if you ignore the homework assignments. Many test questions will be similar to these assigned problems, so it is to your advantage to do them! Your textbook comes with a solution manual so that you can check your work.

- **Midterm Exams:** Due to the lack of lecture time only one midterm exam will be given. There will be no make-up exams without a legitimate excuse ***and proof*** in the form of a signed doctor note, police report, etc.

- **Labs:** Details for the lab sessions are given in the tentative schedule on the website.. If you miss a lab (and/or lab quiz) they will count as zeros in your overall grade. Missing a third lab is unacceptable and will result in a failing lab grade. There will be no make up labs or lab quizzes given. Lab is an essential portion of this course. It is departmental procedure to fail any student for the entire course if they receive a failing lab grade. Do not miss lab unless it is absolutely necessary. Arriving on-time is crucial in this course, especially in lab. If you arrive 10 or more minutes late to a lab session you will receive a zero for that lab day.

- **Safety points:** I take safety very seriously. Unsafe lab behavior, including not wearing goggles can earn a 5 point deduction (-5 points!). Please take safety as seriously! There is no time for unsafe behavior. Serious safety violations can cause removal from the class.

- **Final Exam:** The final exam is cumulative but will focus on the material in the last half of the class. It will be given during the week of **Saturday, May 26th** at 8:30 a.m. in Mer22 according to the exam schedule. A passing grade on the final is required to pass the class.

Classroom Courtesy: As a courtesy to your classmates and to myself, please refrain from talking to other students during lecture, and please remember to turn off your cell phones, pagers, etc before entering the classroom. Also, be punctual in arriving to class. Late arrivals are disruptive to the rest of the class. Any disruptive behavior will ensure a loss of participation points.

Academic Dishonesty: All incidents of academic dishonesty will be reported to the Dean of Student Affairs. Academic dishonesty goes on a student's record and may result in expulsion. It is not worth it!

Attendance: I only take attendance during the first week of instruction. I only add or drop students during the first week of instruction. After that, I do not drop students. If you are no longer attending class, it is your responsibility to drop from the class.

(From the College Catalog) Regular attendance and consistent study are student responsibilities. These two factors contribute most to a successful college experience. A college student is expected to attend all of his/her class sessions. It is the responsibility of each student to know the attendance and absence policy of each class in which he or she is enrolled. Failure to attend class can result in a lower grade or dismissal from class. Any student who stops attending a class without officially dropping it in the Admissions & Records Office may receive a grade of "F." The College's attendance policy relies on the following five basic premises:

1. Students who do not attend the first class meeting may be dropped and may be replaced by other students unless the student notifies the instructor in advance. You may be dropped if you miss any class during the first week.
2. Any absence from class is detrimental to a student's progress in that class; therefore, an "excused" absence is no less serious than "unexcused." Participation in curricular and extra-curricular College activities is acknowledged to be an integral part of a student's total educational experience. Prior approval from the instructor is necessary for this participation not to be considered an absence.
3. Any lack of attendance which leads an instructor to judge that unsatisfactory progress is being made, may result in the student being dropped from the class. Absence from a full semester class in excess of two weeks (consecutive or non-consecutive) may result in the instructor dropping the student. That is, a student may be dropped after missing one more class meeting than twice the number of class meetings per week. Absences in excess of one week (consecutive or non-consecutive) from a Summer session class, or any regular semester class from 6-17 weeks in duration, may result in the instructor dropping the student. That is, a student may be dropped after missing one more class meeting than the number of class meetings per week. Absence in excess of 10% of the scheduled class meetings in classes from 1-5 weeks in duration may result in the instructor dropping the student. That is, a student may be dropped after missing one more class meeting than 10% of the total number of scheduled class meetings.
4. When a student is dropped due to the attendance policy, the assignment of a "W" will be based on the drop occurring before the 14th week for a full semester class. After the 14th week, no drops are allowed, and the only grades given will be: A, B, C, D, F, NP, P. It is the student's responsibility to withdraw formally from classes by the last day to withdraw with a "W." Any student who stops attending a class without officially dropping it in the Admissions & Records Office may receive a grade of "F."

Resources: Many resources are available at www.hartnell.edu. The following resources below are essential for good performance in this class.

- **Tutoring:** The tutorial center is a great resource for students and free! For more information (including a schedule) visit the website or drop in the tutoring center (highly recommended).

- **SI Leader:** The SI leader creates an environment where students learn together. Students who use the SI services regularly tend to do a whole grade better in the class (highly recommended).

- **MESA:** MESA is a peer led tutoring system that is tremendously successful. Drop in on the top floor of Merrill (highly recommended).

- **Office Hours:** Although I don't have regular office hours, I can help a student from getting off track with concepts. Please do not be afraid to visit me. A student's academic success depends on regular interaction with the instructor. I am available to answer short questions during less active parts of lab periods.

Schedule: The course schedule and lab schedule are in separate documents.