Dr. Robert K. Wismer Chemistry 102, Science of Chemistry, Spring 2009_{Nov08} Office: daily 9:30-10:30 a.m.
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Welcome to Reaction Chemistry!

CaputoHall 214, 872-3661

Course Format: This course is based strongly on chemical reactions. Chemical phenomena are presented as demonstrations and we then discuss what occurred during the demonstration and why it occurred. It is important to observe carefully and to understand what you have observed.

Course Materials: TEXT: Lecture Notes, Laboratory Manual and "Chem Lite", Robert K. Wismer, c. 2007. Available the first day of class for $10.00

LABORATORY NOTEBOOK: **MUST** be bound (no ring binders) approximate size 7 X 9.5", quadrille ruled. Use the first page of your laboratory notebook as a running table of contents. Number every page of the book in ink. Record all information in the notebook in ink; never use pencil, erasable ink, or white-out. Neatly draw a line through mistaken entries; do not obliterate them. A notebook is more like a diary than like a report book.

LABORATORY SAFETY GOGGLES: Available in the laboratory storeroom (Caputo 330, ≈$7) and the bookstore. You **MUST** wear goggles whenever you are in laboratory, even if just visiting.

ADDITIONAL LABORATORY EXPERIMENTS AND LECTURE HANDOUTS: Distributed free during class. If you lose your copy or do not pick one up due to unexcused absence, replacement cost is 25¢ each, whether a hand-out is one page or several. These replacements are available in my office; no change is available.

Quizzes and Tests: There will be short unannounced quizzes; expect one each week. Each quiz will cover the material presented since the previous quiz. Often questions will depend on previous material because chemistry builds on all material previously presented. Describing a demonstration presented in a previous class or summarizing your laboratory observations is a reasonable quiz question. There will be two half-hour tests, tentatively scheduled on the days indicated on the lecture/laboratory schedule. Each test will cover all material since the previous test and contain questions similar to those of the quizzes, but may ask for more interrelation between topics.

Demonstration: During the last week of the course, present and clearly explain to the class a chemistry demonstration, suitable for a middle-school or younger audience. Obtain your demonstration from the literature, or originate it. Your descriptions of five demonstrations are due by e-mail (no attachments or web addresses) by noon the last Thursday of March. (A description over six lines—110 words—is automatically rejected.) In a week, the instructors will choose one of your demonstrations. Because unprepared students have endangered themselves and others, your demonstration **MUST** be approved in writing by both course lecturer and laboratory instructor, at least seven days before you present.

"Middle-school or younger" includes the following. (1) The materials and the apparatus for your demonstration must be available to the general public, for example, from stores such as grocery, pharmacy, hardware, and auto supply. In fact, you are expected to obtain the materials and apparatus for your demonstration. (2) Your demonstration must be quite safe. You may protect yourself and your audience with goggles, but you cannnot assume the use of a hood, for instance. (3) Your explanation should be correct and clear enough that a middle school or younger audience understands it. Of course, because this is **YOUR** demonstration, you are responsible for preparting all materials and apparatus, including making solutions. Please ask the instructors of the course for assistance, but do not expect them to do the work for you.

Primary Course Objectives: After successfully completing Chemistry 102, students will be able to:

—Explain how chemical reactions are used to transform matter. (Assessed on written quizzes as well as by answers to oral questions in class.)

—Describe the conditions necessary for a chemical reaction to occur. (Assessed by students describing in writing the reactions they have seen demonstrated and those they have performed.)

—Create simple laboratory apparatus from commonly available materials. (Assessed by having students create simple devices, such as balances, and evaluating the effectiveness of the device each student fabricates in laboratory.)

—Follow written directions in performing a chemical reaction. (Assessed by the laboratory work of students.)

—Perform laboratory experiments observing generally accepted safety precautions. (Assessed by the student's adherence to safety precautions during laboratory work.)

—Consult instructional scientific literature, including educational journals, laboratory manuals, and demonstration compendia, to obtain exercises for demonstration and instruction. (Assessed by the instructor's evaluation of a student exercise of creating a demonstration for the class.)

Course Policies: If you have an objection to any aspect of the course, please communicate it (anonymously or otherwise) to the instructor. Because of "academic freedom," neither department chair nor dean can do as much to help.

Absences: YOU ARE RESPONSIBLE for obtaining the notes for any class you miss, whether your absence is excused or not. You must arrange to make up any missed work. Absences may be excused for university-sponsored events, jury duty, military duty, death or critical illness in immediate family, or personal illness. Support each request for excuse

with a written statement of the absence's reason, signed by the responsible person (coach, faculty member, judge, commander, physician), including that person's phone number. Except for death or illness, requests for excuse must be presented before the date of the anticipated absence. An excuse for personal illness is granted if a physician states you were too ill to come to class. Do not expect to miss more than four class days for any reason and still pass the course.

Plagiarism: You have plagiarized when you submit someone else's work as your own, including copying lab reports or problem assignments without giving credit. The penalty ranges from zero for the assignment plagarized to a course grade of "F." That penalty becomes part of your official record. We may refer both the copier and the one copied from for appropriate action, since we cannot tell which one copied. However, we encourage working together on some assignments. To protect yourself from the charge of plagiarism, simply write, either: "I received help from Joe Smith on this part," or "I helped Sue Jones on this part."

Course Grading: In order to pass the course, you must perform all experiments, turn in all lab reports, and earn a lab grade of 60% or more. You must also earn a lecture grade of 60% or more.

Thirteen (13) experiment reports	260 points	A	≥90%	≥675 points
Twelve ten-minute quizzes	240 points	B	≥80%	≥600 points
Two half-hour examinations (50 points each)	100 points	C	≥70%	≥525 points
Demonstration presentation	50 points	D	≥60%	≥450 points
Final examination	100 points	F	<60%	<450 points
TOTAL	750 points	minus is _0, _1, _2; plus is _7, _8, _9		

TENTATIVE LECTURE & LABORATORY SCHEDULE

Boldface numbers are dates of the month. The material expected to be covered in lecture is given on the appropriate lecture day. The laboratory experiment (abbreviated title) for each week is given in the "Wednesday" space. Each half-hour, 50-point lecture test is indicated with **T**.

Monday	Tuesday	Wednesday	Thursday	Friday
12	**13** Measurement	**14** Metric/Displacement	**15** Volume & Mass Detn	**16**
19 ~~CLASS~~	**20** Density, Solubility Liq	**21** Density & Temperature	**22** Gas Density	**23**
26	**27** Gas Volume & Temp	**28** Solution ΔH	**29** Gas Solubility	**30**
2	**3** Surface Tension	**4** Kool Concentrations	**5** Low Pressure Boiling	**6**
9	**10** Egg Etch/Osmosis	**11** Chromatography	**12** Emulsions: Soap/Egg	**13**
16	**17** O_2 Determination **T**	**18** Oxygen Production	**19** Stoichiometry	**20**
23	**24** Ion Colors	**25** CD spectrometer	**26** Flame Tests / Spectra	**27**
2 SPRING	**3 BREAK**	**4 SPRING BREAK**	**5 SPRING**	**6 BREAK**
9	**10** Acid / Base Tests/Indic	**11** Acid/Base Indicator	**12** ConcDilWeakStr Tests	**13**
16	**17** Precipitation	**18** Household Titration	**19** Detection of Ions	**20**
23	**24** Oxidation Reduction	**25** ZnI_2Synth/Ag Tarnish	**26** Activity Series **T**	**27**
30	**31** Galvanic Cell	**1** ZnI_2Electr/Galvanic Cell	**2** Electrolysis	**3**
6	**7** Water Purification	**8** Soap Making/Ester Synth	**9** Hard Water, Soap	**10**
13	**14** Organic Reactions	**15** Soap Testing	**16** Condensation Reaction	**17**
20	**21** Starch Amylase Sugar	**22** Demo Presentations	**23** Fabric on Fire	**24**
27 FINAL 2:45	**28**	**29**	**30** **1**	