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Prof. Stolzberg's Office Hours: Monday 11 -12 AM, Tuesday 3 – 4 PM, Thursday 4 – 5 PM.  
In addition, I have a policy of 'open office hours by appointment'. If you want to schedule a meeting via phone or email or verbal request, I will almost always be able to oblige you. This semester, I am unavailable due to class commitments at the following times: for 60 minutes before Chem 105X class time, from noon through 2:30 Monday and Wednesday, and from noon until 5:30 on Friday.

**Prerequisites:** (UAF Catalogue): "Placement in ENGL F111X or higher; placement in MATH F107X or higher; or a B or better in CHEM F103X; or permission of instructor and department chair." Students not meeting these prerequisites may be dropped from the course.

**Course Overview:** Chemistry 105X is the first semester of a two-semester series in general chemistry, which deals with a variety of microscopic and macroscopic chemical phenomena. The Chem 105X subject matter describes qualitative and quantitative models of chemical phenomena. Chem 105X covers chapters 1-10 of the textbook. A schedule of lecture topics and assignments is provided on another sheet. Chem 105X is a "Natural Science" course in UAF's Core Curriculum in science.

**Required Materials:**

- (1) *Chemistry and Chemical Reactivity 7th edition.*; Kotz, Treichel, and Townsend, Brooks/Cole; 2009 Volume 1 (ISBN 978-0-495-38711-4) or Complete text 7th Ed. (ISBN 978-0-495-38703-9) or e-book
- (2) OWL access card for *Chemistry and Chemical Reactivity 7th Ed* (6 month or 24 month)
- (3) Turning Technologies ResponseCard RF radio frequency clicker. (new or used)
- (4) A non-programmable, non-graphing scientific calculator is required for each exam. Please do *not* bring a graphing and/or programmable calculator to Chem 105 exams.
- (5) American Chemical Society (ACS), *Preparing for your ACS Examination in General Chemistry*

**Optional Texts:**

Kotz, *Chemistry & Chemical Reactivity - Student Solutions Manual*.  
Kotz, *Chemistry & Chemical Reactivity - Study Guide*.  
David W. Ball, Ed. *Essential Algebra for Chemistry Students, 2nd ed.*

**Laboratory Text:** The description of each laboratory experiment is available in PDF format on the course Blackboard site (<http://classes.uaf.edu/>). Each download will contain background information, a pre-lab exercise, and a post-lab report form, in addition to a description of how the laboratory investigation is to be done. Prior to each lab, *you* must obtain, study, and print out the appropriate parts of the laboratory experiment file. If your printer is broken, find an alternative (such as the printer in 170 REIC).

**Other Material:** Almost all course material, except OWL homework, will be available on the course site on Blackboard (<http://classes.uaf.edu/>). This will include all laboratory material, this course syllabus, a daily schedule of lectures, a weekly schedule of labs, outline of material discussed in class, class handouts, information about OWL, and sample exams. Audio podcasts of lectures may also be available.

### Exams and Grading Information

The student is responsible for all information from assigned text reading, lecture, and OWL homework. Questions from any of these sources may appear on exams. Three one-hour exams and a cumulative final exam will be given; see the weekly schedule for dates and coverage.

The final exam will be a 120-min, 70-item multiple choice exam provided by the American Chemical Society Examinations Institute. The *Preparing for your ACS Examination* text is an excellent source of information and will help you practice and prepare for this exam. The time (Thurs, Dec. 17, 2009, 8-10 PM) and place (201B Reichardt) of the final exam have been set by the UAF Registrar, not your professor. No early or late exams can be scheduled. If you miss the scheduled exam due to travel, then the University policy on Incomplete (I) grades will be invoked.

All exams are *closed book*. Numerical constants and periodic tables will be supplied with each exam. There is no need to memorize this material for any of the exams. Bring pencils, erasers, and a nonprogrammable calculator.

Make-up exams will be allowed if you have a good reason, which you *must* discuss with the professor. An unexplained absence from an exam results in a zero. If you anticipate an absence (intercollegiate sports, travel related to academic courses or your job), talk to Prof. Stolzberg at the earliest possible opportunity. Make the request in September if that is possible. Make up exams will be given in case of illness. Please do not come to an exam if you are ill, especially if you are contagious. If the absence is unexpected (illness, family or personal calamity, cold weather transportation difficulty), talk with the professor at the earliest possible opportunity. Come prepared to document your request. In all cases, we expect that you will take the makeup exam within 1 week of your return to health or your return to Fairbanks. **If you take a makeup exam, we expect that you have no knowledge of the original exam questions or subject matter.**

During all exams, programmable and/or graphing calculators, cell phones, beepers, PDAs, and other electronic devices are not allowed on your person. Power-off these items, and place them inside your closed briefcase, purse, or pack at the back of the room, or on the floor.

Your course grade will be based on your combined exam, homework, class participation, and laboratory performance, which have the following points associated with them:

3 Term Exams	300
Final Exam	100
Laboratory	100
OWL Homework	100
<u>Class Participation</u>	<u>100</u>
MAXIMUM TOTAL	700

The course grades will *not* include pluses and minuses. The final letter grade will be assigned in a manner that does not cause students to compete against one another. The grading scheme will guarantee a letter grade according to the scale on the next page. Thus, if you get at least 630 points, you get an “A”. Prof. Stolzberg may elect to set the grade cutoffs lower, but he will not set them higher.

<u>Letter Grade</u>	<u>Percentage</u>	<u>Student Score</u>
A	90-100	630-700
B	80-89.9	560-629*
C	70-79.9	490-559*
D	60-69.9	420-489*
F	<60	<420*

\* Prof. Stolzberg will exercise good judgment when he makes the letter grade cuts so that two students separated by a fraction of a point will achieve the same letter grade.

If you feel that a mistake was made in grading your exam, you need to attach a written note describing the specific mistake(s) and return the entire exam to Prof. Stolzberg within three days of the time it was returned to you.

Although the laboratory accounts for only 14% of the points, failure to complete a significant portion of the lab work, including attending lab and turning in lab reports, will result in failure of the course, regardless of your work on the exams.

You will have five chances to answer each OWL questions by the due date. Your goal should be to achieve mastery of material rather than answering every single question. Full credit (100 points) will be assigned to students who achieve 90% of the maximum score. Once you have achieved success in an OWL unit, you may redo the problems again without fear of losing earned points.

**Ethical Considerations:** The Chemistry “Department Policy on Cheating” is the following: “Any student caught cheating will be assigned a course grade of F. The student’s academic advisor will be notified of this failing grade and the student will not be allowed to drop the course.”

As a UAF student, you are subject to UAF’s Honor Code: “*Students will not collaborate on any quizzes, in-class exams, or take-home exams that will contribute to their grade in a course, unless permission is granted by the instructor of the course. Only those materials permitted by the instructor may be used to assist in quizzes and examinations. Students will not represent the work of others as their own. A student will attribute the source of information not original with himself or herself (direct quotes or paraphrases) in compositions, theses, and other reports. No work submitted for one course may be submitted for credit in another course without the explicit approval of both instructors. Violations of the Honor Code will result in a failing grade for the assignment and, ordinarily, for the course in which the violation occurred. Moreover, violation of the Honor Code may result in suspension or expulsion.*”

### **Laboratory Information**

The first laboratory meetings will be during the week of September 7. You will do a mandatory Pre-Test that will take approximately 45 minutes. Attendance is required or your spot may be given to someone waiting to get into this closed course.

The purpose of the lab is to do hands-on investigation. We expect you to gain skills in scientific reasoning, experimental design, and use of chemicals and laboratory apparatus. The labs are conducted by graduate and upper division undergraduate teaching assistants. Lab reports will be handed in each week, to be graded and returned by the teaching assistant. Eleven experiments are scheduled for the semester. The laboratory portion of your grade (100 points) will be based upon the average of your best 10 lab grades. Missed labs are scored as zero points. You must attend, perform, complete, and turn in 8 experiments to pass the course. The Chemical Health and Safety experiment (Chem 105 only) is not optional.

There are no make-up labs scheduled during the semester. If you have special scheduling problems or if you miss more than one lab for an acceptable reason, please discuss alternative plans with Emily Reiter, Laboratory Director. Laboratory reports are due one week after a lab is completed. Late reports will be accepted, but the score will be reduced significantly. The last report of the semester cannot be accepted late. The first lab of the semester includes a safety review. Students must attend the safety review in order to continue in the course.

### Teaching Methods

I conduct the course to aid student growth as an effective problem solver and to maximize the chances that students will achieve mastery of chemical knowledge. I encourage students to use active learning to a large extent. I make student-centered learning opportunities available during class time. I teach problem solving strategies that guide the student to efficient, reliable solutions of chemical problems. I alert students to two unpleasant facts. Students must be responsible for their own learning. An investment of many hours per week will be required outside of class and lab to achieve academic success in the course.

Homework will be done using a web based system, OWL. Students receive accurate, rapid feedback in response to their answers. There is opportunity for iterative learning and attaining a high level of subject matter mastery. I will include both required and optional questions to help tune the assignments to fit the needs of both well prepared students and students who feel that there are some gaps in their prior chemical learning. While some students do not feel that web-delivered problems fit their learning style, OWL is better, by far, than any other method that I am aware of for use as a method of developing subject matter mastery in Chem 105. Many of the OWL problems require only first order learning, and they are useful for developing individual skills required to solve more complex problems. The end of chapter OWL problems are typically more challenging and are more germane to the type of problems seen on exams. **Do not expect to learn by simply examining the solutions to problems given in the OWL feedback. For many students, this is a highly ineffective strategy.**

Instructions for logging on to OWL will be given in a handout available during the first class period and in Blackboard. OWL questions will be due 2 or 3 days after the chapter material has been discussed in class. Expect to have approximately two OWL due dates per week.

Extensions for late homework will *not* be given. You will get 'points' for all work done by the due date. You may do OWL problems after the due date to contribute to your active learning, but you will not get any points. (Click on the "Past Due Assignments" link on the "Current Course Assignments" page.

During each of the two lecture meetings each week, you will have opportunities to practice active learning and peer instruction, although I get to do considerable lecturing. A central feature will be my use of ConcepTests. These are multiple choice questions that are presented for everyone to think about and answer. The questions give you a chance to exercise your 'little grey cells'. The answers allow me to assess the current level of comprehension and to plan my next step in lecture. The pause will make the next 20 minutes of lecture more effective for you. When student answers fall into two camps, there is opportunity for peer instruction and learning. Answers will be made using clickers (TurningPoint ResponseCard RF). You will also get to practice active learning by predicting and interpreting the results of chemical demonstrations and simulations.

Each student must purchase a clicker, which is available at the UAF Bookstore or from Internet sources. Student clicker responses are recorded electronically by the TurningPoint receiver and software on Prof. Stolzberg's laptop. Your participation in answering ConcepTests in class will contribute positively to your course grade. A student who participates 85% of the time will earn 100 points. Lesser participation will earn a proportional number of points. No "makeup

clicker questions” will be given. No answers on paper can be accepted. The “85% criterion” should allow for a reasonable number of instances of imperfect attendance and forgotten/inoperable clickers, without penalty to the student score. It is the student’s responsibility to bring the clicker to each class, take care of it, replace it if lost, and keep it supplied with fresh batteries (they should last the whole semester with normal usage).

Register your clicker ID on the OWL website. See the “Labor Day Weekend” handout given out during the first lecture and available on Backboard.

“Clicker by proxy” is a no-no. Use only your own clicker!

I encourage all to participate in the active learning opportunities.

**Expectations:** Prof. Stolzberg expects you to attend class. Each day *before* class, you should read the portion of the textbook that is assigned on the schedule and begin active learning work with end of chapter problems or the assigned OWL questions. This preparation will make your 90 minutes in class more useful. You will know if you need to ask questions, and the ConcepTests and chemical demonstrations are apt to be more instructive to you.

Please conduct yourself in a professional manner. Be respectful of the rights of other students to a quiet and uninterrupted learning experience. Turn off your cell phone ringer. Put away your laptop computer unless you use it exclusively for taking notes. Enter the classroom quietly if you are late.

### Student Strategy

Do out-of-class chemistry work for 1-2 hours every day, using a variety of approaches, including reading, problem solving, drill, and (when available) simulations. Consider spending some of this time in a goal oriented group of Chem 105 students. Practice active learning many times per week when you study chemistry and when you come to class.

Use the excellent structure of the text to alternate passive and active learning. First read a section. *Cover the answer* (!!!) to the worked out example at the end of the section and see if you can do it by yourself. If you were successful, work other similar problems (an end of chapter problem, another worked example, or OWL) and then continue reading in the chapter. If you were unsuccessful, reflect on your difficulty, reread if necessary, and then try a new problem. (If you don’t make progress the second time, talk to a peer or tutor, take some time off and study another subject for 30 minutes, or get help from Prof. Stolzberg.) Use OWL to solidify your skills. Continue the iterative learning as long as you don’t get frustrated or until you reach the amount of time that you planned to study chemistry.

Most students learn more effectively by daily use of active and passive activities than by compressing studies into an epic number of consecutive hours. Learning most of the chapter material well is a far better strategy than reading everything in the chapter.

**Do not expect to learn by mimicking the solutions given in worked text problems, the solutions manual, and in the OWL feedback. For most students, copying a worked solution is highly ineffective.** This strategy may make it more difficult to achieve authentic learning.

Take advantage of in-class active learning opportunities. Consider the solution to ConcepTests carefully before you choose an answer. When Prof. Stolzberg encourages discussion in small groups, engage your peers seriously. When there is chemical demonstration, make an effort to predict what might be expected to occur, to describe what actually occurred, and to figure out what is has to do with the subject matter of the day. Write it all down!

## Other Information

**Instructor-Initiated Withdrawals:** Any time up to and including Friday, Oct. 30, the professor has the right to withdraw a student from Chem 105 for any of the following reasons: (1) Exam I is missed without an excused absence, or (2) two or more labs are missed, or (3) the student shows poor class attendance, or (4) the student is missing a lot of OWL homework. This is our definition of "...have not participated substantially in the course". (See p.42 in the 2009-2010 UAF Catalog.)

**Accommodations For Students With Disabilities:** Students with physical or learning disabilities are required to identify themselves to Mary Matthews in the Disability Services office, 208 Whitaker, (474-5655). The student must provide documentation of the disability. Disability Services will then notify Prof. Stolzberg of special arrangements for taking tests, working homework assignments, and doing lab work.

**Incomplete (I) grade:** A grade of "I" is assigned only when a student misses the final exam or multiple laboratory classes for a documentable reason, such as a medical problem, a death in the family, etc.

### Important Dates:

Last day to drop class and get 100% refund.....Friday, September 11  
Last day to drop class w 50% refund (course not on academic record) .....Friday, September 18  
Freshmen progress reports due.....Friday, October 9  
Last day for student- or instructor- withdrawal ("W" on academic record)....Friday, Oct. 30  
Last lecture. .... Thursday, Dec. 10  
Final Exam.....8 -10 PM Thursday, Dec. 17

**Supplemental Learning Opportunities.** The Department expects to have tutors available a week or two after the semester begins. Tutoring sessions will be in REIC 170. Other help can be obtained during your professor's office hours, during your lab TA's office hours, or at the end of lab if the lab experiment is less than three hours. You may be eligible for free tutoring at UAF's Student Support Service office (<http://www.uaf.edu/sssp/>).

The Department has a cluster of six PCs and a networked printer in REIC 170 that are designated for use by student enrolled in Chem 105 and other introductory chemistry courses. Feel free to use these for OWL and other Chem 105 related work.

Audio podcasts of each lecture will be available, assuming that technical problems are resolved.

# Chemistry $\neq$ Math