

General Chemistry F105X, 4.0 Credits Fall Semester, 2009

Instructor: Dr. William A. Howard
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Laboratory: NSF 241
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Class Meetings: Monday, Wednesday, Friday, 1:00 PM – 2:00 PM, NSF 201
Office Hours: Monday, Wednesday, Friday, 2:00 PM – 3:00 PM

Prerequisites: Minimum SAT Math score of 530 or Minimum ACT Math score of 23. Minimum SAT Critical Reading score of 430 or Minimum ACT English score of 18. The student should be placed in Math F107X or higher and in English F111X or higher. Furthermore, the student should have had at least one year of chemistry in high school or should have received a B or higher in Chemistry F103X. If you do not have the prerequisites, please drop out of General Chemistry F105X immediately and enroll in Basic General Chemistry F103X. (Chemistry F103X will prepare you for Chemistry F105X.)

American Chemical Society Standardized Placement Exam: During the first week of laboratory (September 8 – 11), a multiple choice placement examination will be given. This exam does NOT count toward your grade, but taking this exam is mandatory. Any student who does not take this exam will be dropped from the enrollment. Students enrolled in a Monday lab will not be able to take the exam on Monday, due to the Labor Day holiday. These students should take the exam on either Tuesday, Wednesday, Thursday, or Friday. You will be given 45 minutes to answer 44 questions. The purpose of this exam is to help the student decide if he or she should remain in Chemistry F105X or drop out and take Chemistry F103X instead.

Registration Problems: Some students may wish to change sections in order to take the lab at a different time. These students must drop out of this class and re-register into the new section. I do NOT encourage this. There is no guarantee that the student will be re-admitted into this class.

For any registration questions or problems, please see Mist D'June Gussak in room 194 on week days from 8:00 AM to 4:00 PM.

Course Readings / Materials: The required text book is: "Chemistry & Chemical Reactivity" 7th Ed.; J. C. Kotz, P. M. Treichel, and J. R. Townsend; Thomson - Brooks/Cole; 2009. You will also need a radio frequency clicker, an OWL PIN card, and a book called "Preparing for your ACS Exam." The text book, the book on preparing for the ACS Exam, the OWL PIN card, and the clicker are sold online, and instructions for purchasing these items can be found on the website for the UAF Bookstore:

<http://www.uaf.edu/bookstore/>

Alternatively, the OWL PIN card can be purchased at the following web site:

<http://owl.cengage.com>

You can purchase an OWL PIN that is good for either 6 months (not recommended), 1 year, or 2 years.

The RF clicker can also be purchased at the following web site:

<http://www.turningtechnologies.com/audienceproducts/responseoptions/responsecards/>

There is no lab manual for this course. Labs will be posted throughout the semester on Blackboard.

Finally, every student will need a non-programmable calculator. (A programmable calculator is one that has graphing functions and can show graphs on the display. Programmable calculators are not permitted in this class.) Students must bring their calculators to class when exams are given. If a student does not have a non-programmable calculator when the exam is given, then that student will probably receive a poor grade on the exam.

Clickers: The clickers are radio frequency, NOT infrared. (On the front of the clicker, the student should see “RF” and not “IR.”) When using the clicker, the student should check to see if the battery is good and should tune the clicker to channel 41. Tuning is done by: (1) pressing the “Go” button so that a light on the clicker flashes red and green; and (2) pressing “41” while the light flashes; and (3) pressing the “Go” button again. Students should label their clickers with their names and contact information in case the clicker is misplaced.

Immediately after the student has purchased a clicker, the student should register the clicker ID number by reporting this number to Prof. Howard by email. The clicker ID number consists of 6 digits (letters and numbers) and is found on the back of the clicker, under the bar code. Prof. Howard will then notify the student of his or her clicker response number by email. The clicker response number is the number that “lights up” on the overhead screen when the computer has successfully received an answer from that student.

Course Overview: General Chemistry F105X, a 4.0 credit course, is the first semester of a two semester series in general chemistry which describes a wide variety of microscopic and macroscopic chemical phenomena. We will cover chapters 1 – 10 of the Kotz text, according to the schedule accompanying this syllabus. Chem F105X is a “depth” core course. Your attendance at lecture, MWF 1:00 – 2:00 PM in NSF 201, is expected and recorded.

General Chemistry F106X is the second-semester sequel to the Chem F105X course, and the remaining chapters (11 – 23) of the text book will be covered. At the end of Chem

F106X, a standardized final examination will be given. This final examination will test for some concepts covered in Chem F105X.

Course Goals and Student Learning Outcomes: As a result of the General Chemistry F105X experience, students will become familiar with and practice the scientific method and learn basic skills in laboratory practices, in general chemistry, and in performing chemical calculations. Students will also learn how to test ideas experimentally and will learn the relationship between science and public policy.

Blackboard: The syllabus, exam scores, lab scores, OWL scores, and clicker scores will be posted periodically on Blackboard. Each student will be able to see only his or her own scores and will NOT be able to see the scores of other students. Freshman progress grades and final letter grades will NOT be posted on Blackboard; rather, these letter grades will be posted on UAOnline.

Instructor's Expectations of Students: Each day BEFORE class, the student must read the portion of the text book that is assigned on the schedule of reading assignments included with this syllabus. *The student must bring the text book and the clicker to class every day.*

In class, sections of the text book will be covered by lecture or by problem-solving. After covering a section, teams of students will be formed and will solve practice problems as a team. Afterward, a quiz will be given. There will be two quizzes given per class period. At least one week before each major examination, a practice test and an answer key will be given on Blackboard. The practice test is nearly identical to the real exam, and the student is strongly encouraged to work the problems in the practice test. Students are expected to complete their On-line Web-based Learning (OWL) homework assignments on time.

Honors Chemistry: The lectures for the Honors section are the same as those for all other sections. Honors students will be expected to read the following book:

Uncle Tungsten: Memories of a Chemical Boyhood by Oliver Sacks
<http://www.amazon.com/s/104-6102581-3250331?ie=UTF8&index=books&rank=-relevance%2C%2Bavailability%2C-daterank&field-author-exact=Oliver%20Sacks>

A short quiz on this book will be given to the Honors students only during the week of December 7 in lab. This quiz will be worth 25 points.

Tentative Grade Scale: Grades will be assigned WITHOUT the +/- indicators.

Criterion	Maximum Point Value
50 quizzes	50 x 2 points = 100 points
Examination 1 (in class part)	50 points
Examination 1 (take-home part)	25 points
Examination 2	100 points
Examination 3 (in class part)	100 points

Examination 3 (take-home part)	25 points
Final Examination	100 points
OWL Homework	100 points
Lab Reports	100 points
Honors Quiz	25 points
Total	700 points 725 points (Honors Students)

<u>Range of Points</u>	<u>Letter Grade</u>
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700 – 630	A
629 – 560	B
559 – 490	C
489 – 420	D
419 or less	F

(If you get at least 630 points, you get an “A.” I may elect to set the grade cutoffs lower, but I will not set them higher.)

Quizzes: There will be 74 quizzes given throughout the semester. Only the top 50 quiz scores will count for a grade however. Each quiz is worth 2 points, and the total quiz grade is worth 100 points. Each quiz will feature 1 multiple choice question, and the student receives two points for the correct answer and one point for an incorrect answer. A quiz score of 0 (zero) means that the student did not take the quiz.

Examinations: Three regular examinations and one final examination will be given. The first exam will consist of two parts – an in-class part, and a take-home part. The in-class part of exam 1 will be closed book and closed notes and will cover only chapter 1 and the math with significant figures. The take-home part of exam 1 will cover scientific theories and experimental design.

The second regular exam will be entirely in-class, closed book, and closed notes.

The third regular exam will consist of an in-class part and a take-home part. The in-class part of exam 3 will cover chapters 6, 7, 8, and 9. The take-home part of exam 3 will cover the relationship between science and public policy.

The final examination will be closed book, closed notes and will cover everything taught in General Chemistry F105X. The final exam is a standardized multiple-choice exam, prepared by the American Chemical Society.

Practice tests will be given for exams 1, 2, and 3. But, no practice test will be given for the final exam.

Make-up exams will be allowed for good reasons. If you can anticipate an absence (work commitments, intercollegiate sports, etc.), talk to your professor ***before*** the exam to make arrangements. If the absence is unexpected (illness, family or personal difficulties, cold weather transportation), talk with your professor at the earliest possible opportunity.

Please reschedule an exam if you are ill. If you are to take a makeup exam, we expect that you have no substantial knowledge of the content of the original exam. If you have found out about the exam content, you are obligated to tell this to your professor well before the scheduled time of the makeup exam.

OWL Homework: Homework problems will be done using the OWL (On-line Web-based Learning) system, developed at the University of Massachusetts Amherst. The homework can be accessed by visiting the following web site:

<http://owl.cengage.com/owl-c/register/owlmgr.cgi?Mode=2&ArchivedDatabaseID=140&CategoryID=33>

When visiting this web site for the first time, the student should register. Registering is done by clicking on the Student Registration button and simply following the directions given. Prof. Howard will show students how to register during the second day of class. Please remember your OWL login and password. Write them down somewhere and do NOT forget them! If you lose them, you will need to contact Cengage directly in order to get your login name and password sent to you by email, and this process is time-consuming.

Students will have 5 chances to get each OWL problem correct. Extensions on homework due dates will NOT be given for any reason. But, a student may miss 10% of the homework problems with no effect on his or her grade at all. OWL homework is graded in the following manner: At the end of the semester, the number of problems done correctly and on-time will be divided by the total number of problems, and this ratio will be multiplied by 100. Then, 10 will be added to the result. So a student might complete only 90% of the OWL problems and receive a final homework score of 100. A score greater than 100 will NOT be given.

All OWL homework assignments are due at 11:00 PM Alaska time AFTER the material has been discussed in the classroom. See the schedule at the end of this syllabus for the homework due dates.

Laboratory: 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 who will have specific office hours. Lab reports will be given on Blackboard each week. Eleven experiments are scheduled for the semester. The laboratory portion of your grade (100 points) will be based upon the average of your best ten lab grades.

All students enrolled in Chem F105X must attend laboratory. Students completing reports for fewer than eight labs will fail the course, even if they have passing exam grades. You must attend lab prior to writing a lab report! There are no make-up labs scheduled during the semester. However, a student may make up a lab later in that same week if there is available space in another lab and with the TA's permission. If you have special scheduling problems or if you miss more than one lab for an acceptable reason, please discuss alternative plans with Professor Howard.

Laboratory reports are due one week after a lab is completed. Late lab reports will be accepted provided that the student has a good excuse for not turning in the lab report on time. The last report of the semester will not be accepted late.

Students MUST arrive in the lab on time. If a student is 15 minutes late, then that student will NOT be permitted to take the lab that day.

Cell phones and contact lenses are NOT permitted in the lab.

No lab work will be carried out during the first week of class. Rather, a placement exam will be given. The first lab work occurs during the second week of class and includes a safety review. **STUDENTS MUST TAKE THE PLACEMENT EXAM AND ATTEND THE SAFETY REVIEW IN ORDER TO STAY IN THIS COURSE!**

Please see the portion of the UAF Honor Code reproduced in the “Ethical Considerations” section below. Do not believe any rumors that it is acceptable to make up data or to use the work of another student (other than a lab partner in a collaborative experiment) as the basis of a lab report.

Help: Extra help is available, in case the student is having difficulty with Chem F105X. Prof. Howard’s office hours are shown at the top of page 1 of this syllabus. If a student cannot meet with Prof. Howard during normal office hours, some alternative times are:

Mondays, 3:20 PM to 4:15 PM, 7:00 PM to 9:00 PM

Tuesdays, 1:00 PM to 4:15 PM (not always), 8:30 PM to 9:00 PM

Wednesdays, 3:20 PM to 4:15 PM

Thursdays, 1:00 PM to 2:00 PM

Fridays, 3:20 PM to 4:15 PM

Saturdays, 1:00 PM to 9:00 PM

Sundays, Not available at all.

The student should make an appointment to see Dr. Howard by email or phone.

All TAs will have regular office hours also, and a student may see any TA for help with either lab or lecture. The TAs will see students in room 170 of the Reichardt Building. A schedule of office hours will be posted on Blackboard under “Staff Information.”

The Department of Chemistry & Biochemistry will also offer free tutoring to all Chem. F105X students. A tutor will be available in room 170 (Reichardt), and the tutor’s office hours will also be posted on Blackboard.

There will also be supplemental instruction, led by Mr. Robert Gorsline.

Ethical Considerations: The Chemistry “Department Policy on Cheating” is this: *“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.”*

Some examples of cheating include, but is not limited to, the following: (1) using another student’s clicker; (2) using cell phones during exams or quizzes; (3) plagiarism; (4) using programmable calculators during exams; (5) copying another student’s answer while taking an exam or a quiz; and (6) unauthorized collaborations on lab projects.

During exams and quizzes, electronic devices such as pagers, mp3 players, Ipods, earbuds, text messengers, gameboys, etc. must be turned off.

If you misplace your clicker, immediately notify Professor Howard. You must buy a new clicker. Using another student's clicker is strictly prohibited. If a student is caught using another student's clicker, both the borrower and the lender will be considered cheaters and will be subjected to the policies on cheating.

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.”

Disabilities: Students with documented disabilities who may need reasonable academic accommodations must provide documentation of the disability to Disability Services in the Center for Health and Counseling, 474-7043, TTY 474-7045. Disability Services will then notify Prof. Howard in writing of the disability and will advise on how the student should be tested and which accommodations should be made.

Early Warning: During the first two weeks of class, Prof. Howard will review each student’s progress on the clicker questions and on the OWL homework problems. Students who are not completing their homework assignments on time or who are getting many zeros on the quizzes will be warned once. If these students continue to do poorly, they will be withdrawn from the course.

Instructor Withdrawals: The instructor reserves the right to withdraw any student from class for any of the following reasons:

- (1) The student has missed an exam without an excused absence;
- (2) The student has missed more than three labs;
- (3) At least one half of the quiz scores are 0 as of October 29;
- (4) The student has not completed at least one half of the OWL assignments as of October 29;
- (5) The student appears to be failing as of October 29. The last day for instructor withdrawal is October 30.

Freshman Progress Reports: Freshman progress reports will be based on Exam 1 and on quiz scores and OWL homework scores, up to and including October 7.

Incompletes: A grade of “incomplete” is assigned only when a student misses the final exam for a very good reason, such as a medical problem, a death in the family, etc.

Important Dates:

- Labor Day – NO CLASS Sept. 7
- Last day to drop class with 100% refund Sept. 11
- Last day for withdrawals with class not appearing on record Sept. 18
- Last day to drop class with 50% refund Sept. 18
- Freshman Progress Reports due Oct. 9

- Last day for withdrawals with student receiving “W” Oct. 30
- Thanksgiving Break Nov. 26 – 29
- Last day of class Dec. 14

See academic calendar on inside cover of Spring 2007 Class Schedule for more important dates.

General Chemistry F105X Schedule

Professor Howard Fall 2009 Semester

Week No.	Dates	Reading Assignments	Classroom Activity	OWL Due?	Lab Experiment
1	9/4/09		Discussion of Syllabus		None
	9/7/09		Labor Day – NO CLASS!		Standardized Pre-Test
2	9/9/09	No reading yet!	How to Use OWL and the Clickers, My Commercial		Attendance Mandatory
	9/11/09	Pages 1 – 7	Theories and the Scientific Method	Intro to OWL	
	9/14/09	Pages 24 – 43	Making Measurements	Beginning Survey, Math 1-4	Chemical Health & Safety
3	9/16/09	Pages 24 – 43	Math with Significant Figures, Unit Conversions	Math 5-7, LR 1b, 3d, 3e, 3f	Attendance Mandatory
	9/18/09	Pages 339 – 347	Atomic Theory	LR 3i, 3k	
	9/21/09	Chapter 1	Atoms, Molecules, Chemical and Physical Changes	IC2.1	Introduction to Lab
4	9/23/09	Chapter 1, pages 24 - 29	Density, Temperature Scales	1.2a, 1.2c, 1.3-4	Techniques
	9/25/09	Pages 50 – 62	Atomic Structure, Isotopes, Periodic Table	1.5c, 1.6a	
	9/28/09		Exam 1		Identification of an
5	9/30/09	Pages 62 – 70	The Elements, Formulae	2.2a, 2.2c, 2.3a, 2.4b, 2.5b	Unknown Substance
	10/2/09	Pages 70 – 80	Ionic Compounds, Naming and Formulae	2.5c, 2.6	
	10/5/09	Pages 80 – 88	Naming Molecular Compounds, Moles	2.7d, 2.7j, 2.7k	Reactions in Aqueous
6	10/7/09	Pages 88 – 98	Empirical and Molecular Formulas	2.8b, 2.9g, 2.9h	Solution
	10/9/09	Pages 112 – 127	Chemical Reactions, Electrolytes	2.10b, 2.10f, 2.11b	
	10/12/09	Pages 127 – 141	Net Ionic Equations, Acids and Bases	3.2d, 3.5c, 3.5f	Cycle of Copper Reactions
7	10/14/09	Pages 141 – 152	Oxidation Numbers and Redox Reactions	3.6b, 3.6g, 3.7e	
	10/16/09	Pages 158 – 169	Stoichiometry, Limiting Reagents	3.8, 3.9b	
	10/19/09	Pages 169 – 179	Chemical Analysis and Solutions, Dilutions	4.1a, 4.1c, 4.2f	Energy Content of Foods
8	10/21/09	Pages 179 – 193	pH, Titrations, and Spectrophotometry	4.4c, 4.5e, 4.5h	And Fuels
	10/23/09	Pages 208 – 215	Thermodynamics Concepts, Definitions	4.7g, 4.7h	

	10/26/09	Pages 215 – 227	Specific Heat Capacity, Changes in State	5.2e, 5.3b, 5.4c	Enthalpy of Neutralization
9	10/28/09	Pages 227 – 240	Hess' Law, Calorimetry	5.5a, 5.5c, 5.6b	
	10/30/09	Pages 268 – 281	Electromagnetic Radiation, Atomic Spectra	5.6d, 5.7b, 5.7d	
	11/2/09		Exam 2		Introduction to
10	11/4/09	Pages 282 – 291	Bohr Model of Hydrogen, Atomic Orbitals	6.1b, 6.1e, 6.2d	Spectroscopy
	11/6/09	Pages 291 – 295	Spin and Magnetism	6.3c, 6.3e, 6.4b	
	11/9/09	Pages 304 – 316	Pauli Exclusion Principle, Aufbau Principle	6.5c, 6.6b, 6.7b	Spectroscopy and Water
11	11/11/09	Pages 316 – 318	Electron Configurations	7.1, 7.2b, 7.3e	Hardness
	11/13/09	Pages 319 – 330	Periodic Trends of Atoms and Ions	7.3g, 7.3h, 7.4c, 7.4e	
	11/16/09	Pages 348 – 358	Drawing Lewis Structures	7.5b, 7.5e, 7.5i	Isotopes and Gas
12	11/18/09	Pages 359 – 367	Formal Charges, Resonance Forms	8.2a, 8.3b, 8.3c	Chromatography / Mass
	11/20/09	Pages 367 – 375	VSEPR Theory	8.4b, 8.5b, 8.5d	Spectroscopy
	11/23/09	Pages 386 – 393	Bond Properties	8.6a, 8.6b, 8.6f	NO LAB
13	11/25/09	Pages 375 – 386	Polarity and Electronegativity	8.9a, 8.9c	
	11/27/09		Thanksgiving Break – NO CLASS!		
	11/30/09	Pages 404 – 422	Valence Bond Theory, Hybridizations	8.7, 8.8b	Computational Chemistry
14	12/2/09	Pages 422 – 432	σ and π Bonds, Molecular Orbital Theory	9.2f, 9.2g, 9.2h	Using HyperChem
	12/4/09	Pages 948 – 961	Environmental Chemistry and Public Policy	9.2o, 9.3d, 9.3f	
	12/7/09		Exam 3		Standardized Post-Test
15	12/9/09		Chirality, Alkanes and Alkenes	IC5.1, IC5.2	Attendance Mandatory
	12/11/09		Alkynes, Aromatics, Alcohols	10.1d, 10.2c, 10.2d	
	12/14/09		Ketones, Amines, Aldehydes, Esters, Polymers	Final Survey, 10.2g, 10.3c,	
16				10.4e, 10.4f, 10.4k, 10.5d	

