



Professor: Ken Overway
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Homework Login Page: photon.bridgewater.edu

Course Description: Principles of chemistry including stoichiometry, states of matter, atomic and molecular structure, chemical bonding, periodicity, energy relationships and equilibria, acid-base chemistry, electrochemistry, kinetics, solubility, thermodynamics, kinetic molecular theory of gases, and the systematic study of families of elements. CHEM 161 is the first semester of a two-semester introductory chemistry course.

Course Credits: 4 credits

Course Meeting: section 01: MWF 8:00 AM - 8:50 AM in McKinney 337

Required Materials :

- textbook – *Chemistry: A Molecular Approach* by Nivaldo Tro, 2nd ed., Prentice Hall (ISBN 978-0321651785)
- a Texas Instruments TI-30XIIS calculator (available in the bookstore or purchase on your own)
 - **NOTE: CELL PHONE USAGE WILL NOT BE ALLOWED DURING EXAMS, SO DO NOT DEPEND ON THE CALCULATOR FUNCTION OF YOUR CELL PHONE**
 - **The use of such devices will result in an F for that assignment.**
- a laboratory manual – purchased from the Chemistry Department (signs are posted)
- a laboratory notebook and a pair of safety glasses or goggles

Course Objectives: In this course we will study the properties and interactions of matter from a molecular viewpoint. The importance of chemistry to many fields of science will be emphasized. We will strive for an understanding of the molecular nature of matter. Important skills such as problem solving, abstract thinking, logic, and algebra will be enhanced and our vocabularies expanded.

My goal for the course is to

- provide you with the all the necessary resources to allow you to learn
- learn something new about chemistry

This semester we will be using a problem based group-work approach to learning chemistry. You will be reading the book outside of class and coming to class ready to work in group on problem sets.

Course Objectives/Student Learning Outcomes: General Chemistry, Lab Skills

Letters of Recommendation: Some time during your years at Bridgewater College you may need to obtain a letter of recommendation from me or your other professors for an employer, graduate school, medical school, etc. I am always willing to write these letters since I like to brag about my students who work and study so very hard. In all letters I try to convey the truth about students' achievements and behavior. Thus, your performance and behavior in the classroom and laboratory forms the content of these letters. If you show independence, competence, and knowledge of the class material or laboratory experiment, those details will be discussed in the letter. Accordingly, all poor behavior such as sleeping in class, texting, whining, cluelessness, and lack of initiative will also go into any letter of recommendation. Your behavior will not affect your grade in class unless it becomes disruptive to others in the class, but do not expect any requested letter of recommendation to be more praiseworthy than you deserve.



Laboratory: Chem 161 has a weekly, mandatory lab. The course work and lab work are integrated and you may be required to answer questions about what you did in lab on class exams. More information about the requirements of the laboratory are given in the laboratory manual.

Office Hours: If I am in my office and the door is open, you are welcome to come in and ask questions. I think some of my best teaching moments occur during the help I provide students outside of class. Making an appointment with me via email will be your best method of getting help outside of class, but you are always welcome to stop by my office and see if I am available.

Grading: The grading break-down is as follows:

Item	% of Total	% Earned	Letter Grade	% Earned	Letter Grade
homework	15 %	≥ 95.0 %	A	≥ 73.3 %	C
quizzes	15 %	≥ 90.0 %	A-	≥ 70.0 %	C-
exams	30 %	≥ 86.7 %	B+	≥ 66.7 %	D+
final exam	15 %	≥ 83.3 %	B	≥ 63.3 %	D
lab score	25 %	≥ 80.0 %	B-	≥ 60.0 %	D-
		≥ 76.7 %	C+	< 60.0 %	F

Homework: Homework is a very important way to learn anything. Unless you practice something over and over, you will not learn it well. Students who conscientiously complete all homework assignments generally do the well in the class. Homework will be assigned and completed using the online Computer Assisted Personalized Approach (CAPA) system. Each week CAPA assignments will be distributed in the lecture room. Each assignment has a set number and a CAPA ID number. See the “CAPA Homework Instructions” handout for more information.

IMPORTANT: Because the answers to each CAPA assignment will be different from person to person, you are strongly encouraged to work with other students on your homework and use the course discussion board. It is acceptable to work with friends to figure out the formula or answer to each question as long as each person understands the answer to the problem BEFORE it is answered. Suffice it to say that while I may not be able to tell immediately if someone has done your homework for you (this is cheating, by the way, and will not be tolerate if it is detected), I will be able to tell if you have done your own homework by your quiz and exam scores.

Homework extra credit: For most of the topics we discuss in class, you will receive two sets of homework. The first set, marked at the top with “chem161”, is the set that is mandatory and will contribute to your homework score. The other set, marked at the top as “xtra161”, will provide you with extra credit if you choose to do the problems. For each extra credit point you earn, you will receive 1/5th of a quiz point. Thus, earning 100 points will earn you 20 quiz points. You will have to do a lot of work for these extra points, but the extra practice in working problems you will receive will also improve your understanding of the material. No other form of extra credit will be available in this class.

Course Home Page: There will be a course home page which you can locate from my home page located at the following URL: www.bridgewater.edu/~koverway/ (then go to “My Courses” and the appropriate class and section in the table given). This web site will be the depository for worksheets, links to the homework system, practice exams, and links to extra reading material.



Quizzes: Quizzes are meant to prepare you for the exams. Quizzes will be timed and taken from homework problems, information from class discussions, or examples from worksheets. The questions may require numerical answers or explanations. Pertinent mathematical formulas will be provided for you on the quiz. Quizzes will be given throughout the semester during lecture (some announced and some unannounced). I will drop the two lowest scores and include the rest in your final grade. No make-up quizzes will be given for any reason, so the quizzes you miss will be the quizzes that get dropped.

Exams: There will be 3 exams given during the semester (see schedule for dates) and one comprehensive final at the end of the semester. Pertinent mathematical formulas and/or physical constants will be provided for you on the cover page of each exam.

You will not be allowed to listen to any music or electronic device during exams.

NOTE: If you fail to show up for an exam without notifying me **in advance**, you will receive a zero for that exam unless you have documented proof that a personal or familial medical emergency occurred the evening or morning before the exam.

Rescheduling Exams: If you need to reschedule an exam or the final exam, you must get written notice from the Academic Dean (Carol Scheppard). When I have received the written notice, I will arrange for a mutually convenient time for you to take the exam.

Emergency Relief: Since mastery of the course material is very important, one allowance will be made on your behalf. If you score poorly on one of the exams and you do much better on the final exam, the percentage score of the final exam will replace the exam score. This does not apply to an exam that you missed.

Attendance: Regular class attendance is expected of all students and attendance records are kept via missed quizzes and homework assignments that are not received in class. A student who persists in being absent from class will be reported to the Vice President and Dean for Academic Affairs. At the discretion of the instructor and the Dean, the student may be withdrawn from the course with a Withdraw Failing (WF) grade and may possibly be withdrawn from the College. Missing class too often will directly affect your grade in the course through missed quizzes, for which there are no opportunities for make-ups.

College Honor Code: Ethics, honor, and integrity are the fundamental principles at the core of the Bridgewater College experience. Our community can only flourish in an environment of trust and respect and these notions of personal honor, integrity, and faith are the fundamentals of the Bridgewater Honor System. The Code of Honor prohibits lying, cheating, and stealing and Bridgewater College's commitment to ethics, integrity, and values is embodied in the Code of Ethics. Violation of these Codes demonstrates harm to the community and an all-student Honor Council administers regulation of this Honor System. It is the goal of our Honor Council to assist in the development of students' ethical and moral base (2006-2007 Academic Catalog, Bridgewater College). It may be found at <http://bridgewater.edu/WritingCenter/BCplagiarism.htm>

Notification of Student Support Services: The Academic Support Center, located in Bicknell House, promotes learning skills and personal development through academic counseling, advising, tutoring services, disability services, and a transition program for selected new students. Further information may be found at http://www.bridgewater.edu/departments/academic_support/

Disabled Students: If you require any special equipment or consideration due to a learning or physical disability, please let the instructor know at your discretion.

Tentative Schedule

Day	Date	Topic	Reading	Worksheet	CAPA Set Due	Notes
Wed	9/7/2011	Introduction				
Fri	9/9/2011	significant figures, unit conversions	Chapter 1	CH1A	1	
Mon	9/12/2011	review and/or start Chapt. 2	Chapter 1	CH1B	2	
Wed	9/14/2011	Atoms and Elements	2-2.6	CH2A	3,4	quiz 2
Fri	9/16/2011	The Mole and Molar Mass	2.7-2.9	CH2B	5,6	
Mon	9/19/2011	Molecular Representations	3-3.4	CH3A	7,8	
Wed	9/21/2011	Nomenclature	3.5-3.6	CH3B	9,10	
Fri	9/23/2011	% Composition, Combustion Analysis	3.7-3.10	CH3C	11,12	quiz 3
Mon	9/26/2011	Combustion Analysis, Balancing Reactions	3.7-3.10	CH3C	13	
Wed	9/28/2011	review				quiz 4
Fri	9/30/2011	Exam I	Chapt. 1-3			
Mon	10/3/2011	Chemical Quantities: % yield, limiting react.	4-4.3	CH4A	14	
Wed	10/5/2011	Chemical Quantities: % yield, limiting react.	4-4.3	CH4A	15	
Fri	10/7/2011	Solution Concentration and Stoichiometry	4.4	CH4B	16	
Mon	10/10/2011	<i>Fall Break</i>				<i>no scheduled class</i>
Wed	10/12/2011	Solution Concentration and Stoichiometry	4.4	CH4B		
Fri	10/14/2011	Gases: Simple Gas Laws	5-5.5	CH5A	17,18	
Mon	10/17/2011	Gases: Mixtures and Partial Pressures	5.6-5.7	CH5B	19,20	
Wed	10/19/2011	Gases: Kinetic Molecular Theory	5.8-5.10	CH5C	21,22	
Fri	10/21/2011	review	Chapt. 5		23	quiz 5
Mon	10/24/2011	Thermochemistry: Internal Energy and Heat	6-6.4	CH6A	24	
Wed	10/26/2011	Thermochemistry: Calorimetry	6.5-6.7	CH6B	25,26	
Fri	10/28/2011	Thermochemistry: Hess's Law and Enthalpy	6.8-6.10	CH6C	27,28	
Mon	10/31/2011	review	Chapt. 6		29	quiz 6
Wed	11/2/2011	Exam II	Chapt. 4-6			
Fri	11/4/2011	The Nature of Light	7-7.4	CH7A	30	
Mon	11/7/2011	Quantum Numbers and Atomic Orbitals	7.5-7.6	CH7B	31,32	
Wed	11/9/2011	review	Chapt 7	CH7B	33	quiz 7
Fri	11/11/2011	Electron Configurations	8-8.5	CH8A	34	
Mon	11/14/2011	Periodic Properties of Elements	8.6-8.9	CH8B	35,36	
Wed	11/16/2011	Lewis Dot Structures I	9-9.3; 9.5-9.8	CH9A	37,38	
Fri	11/18/2011	Lewis Dot Structures II	9.8-9.10	CH9B	39,40	
Mon	11/21/2011	VSEPR Shapes	10-10.5	CH10A	41,42	
Wed	11/23/2011	<i>Thanksgiving Break</i>				<i>no scheduled class</i>
Fri	11/25/2011	<i>Thanksgiving Break</i>				<i>no scheduled class</i>
Mon	11/28/2011	review	Chapt. 8-10.5		43	quiz 8
Wed	11/30/2011	Exam III	Chapt. 7-10.5			
Fri	12/2/2011	Valence Bond Theory	10.6-10.7	CH10B	44	
Mon	12/5/2011	Molecular Orbital Theory	10.8	CH10C	45,46	
Wed	12/7/2011	review for the final exam			47	quiz 9
Fri	12/9/2011	review for the final exam				
Final Exam Schedule						
Wed	12/14/2011	1:30 - 3:30 PM in MCK 337	section 01			

Note: This schedule will be adjusted throughout the course to provide for maximum student learning and contextual changes within the community of learners.

The following information applies to the General Chemistry I lab for the Fall semester of 2011:

- See section number below for lab location.
- All sections will begin at 1:00 PM and will end before 5:00 PM

Lab Section Assignments

Section	Day	Instructor	Lab Room
01	Monday	Brumbaugh	323
02	Tuesday	Overway	323
03	Tuesday	White	327
04	Wednesday	Brumbaugh	323
05	Thursday	White	323

Schedule of Experiments

Exp #	Experiment Name	Week	Week Starting
	Safety Seminar and purchase lab manual sometime this week	1	9/7/2011
3	Hypothesis and Experimental Design; Volume and Density	2	9/12/2011
5	Inorganic Qualitative Analysis of Anions	3	9/19/2011
6	Empirical Formula of Magnesium Oxide	4	9/26/2011
Quiz	Hypothesis, Experimental Design, and Analysis Exercise	5	10/3/2011
	Fall Break Week – Make-up Lab on (TBA)	6	10/10/2011
1 & 2	Spreadsheet Exercise/Using Spreadsheets in Chemistry	7	10/17/2011
10	Vapor Density to Determine a Molecular Weight	8	10/24/2011
13	Enthalpy of Formation of Magnesium Oxide--Calorimetry	9	10/31/2011
13	Enthalpy of Formation of Magnesium Oxide--Calorimetry	10	11/7/2011
7	Equivalent Mass of Magnesium	11	11/14/2011
	Happy Thanksgiving – No scheduled lab	12	11/21/2011
8	Solubility and Temperature	13	11/28/2011
Exam	Lab Practicum	14	12/5/2011

Be prepared – make sure you bring the following with you to lab *every time*

- your lab notebook
- an ink pen (no pencils)
- your lab manual
- your safety goggles
- proper clothing and shoes (see the lab manual)
- finish your prelab assignment on time