

**Course Information**  
**Chemistry 1305: Survey of General Chemistry**  
**Fall 2015**

**Course:** CHEM 1305-001 meets Tuesdays and Thursdays, 3:30 pm-4:45 pm, location: STC122; CHEM 1305-002 meets Mondays, Wednesdays and Fridays, 2:00 pm-2:50 pm, location: AGIT238.

**Instructor:** Allan D. Headley

**Office:** Science Building, 337

**Office**

**Hours:** Wednesdays, 11:00 a.m. to 12:00 noon; Thursdays, 11:00 a.m. to 12:00 noon

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**Texts:**

Your basic text is "Introduction to General, Organic, and Biochemistry, 11<sup>th</sup> Edition, Bettelheim, F. A.; Brown, W. B.; Campbell, M. K.; Farrell, S. O. and Torres, O. M.; Brooks/Cole, Cengage Learning, 2016; ISBN-13:978-1-285-86975-9.

**Course description, objectives, and learning outcomes**

This is a one-semester course, which covers the fundamentals of chemistry, including basic physical principles and descriptive chemistry of the metal and non-metals, with application to related fields. The course is designed to develop and improve the student's ability to think critically and solve problems. Thus, a letter grade earned in this class not only reflects the student's knowledge of basic general chemistry, but also reflects the student's ability to solve scientific problems based on available information, and to become a better scientist.

**PREREQUISITES AND COREQUISITES**

Prerequisites: MATH 1314 or MATH 1324 or MATH 179.

**EXAMINATIONS**

**First Exam:** Week of September 28, 2015

**Second Exam:** Week of October 26, 2015

**Third Exam:** Week of November 23, 2015

**Final Exam:** Week of December 14, 2015

Your course grade will be based on your exams, homework, and quizzes. Each course midterm exam is worth 100 points (20% of your final grade), homework will be 15% and the average of your quizzes will be worth 15%. A course comprehensive standardized final exam is worth 10% of your final grade. The key and score distribution will be posted on the bulletin board which is located in the hallway of the third floor – across from Room 351/352 (Science building).

## MAKE-UP EXAMS

NO make-up exams will be offered. If you miss a midterm for a reason beyond your control, you may request in writing to be excused from that exam providing you have valid written documentation supporting your reason.

## COURSE WITHDRAWAL

See the following website for more details about course withdrawal deadlines:  
<http://www.tamuc.edu/admissions/registrar/academicCalendars/>.

## TENTATIVE SYLLABUS

<b>Week of</b>	<b>TOPICS TO BE COVERED</b>	<b>READING ASSIGNMENTS</b>
Mon, 8/31	Introductions, the study of matter Scientific measurements, Conversions	1 – 6 6-12 12 – 17
Mon, 9/7	States of matter, forms of energy Classification of matter Atoms	17 - 23 27 – 32 32 - 36
Mon, 9/14	Isotopes, periodic table Orbitals Orbitals (continued)	36 - 45 45 – 49 49 - 53
Mon, 9/21	Properties of elements Octet rule, anions & cations, bonds, electronegativity	53 - 56 58 – 60 60 - 64
Mon, 9/28	<b>Exam #1</b> Ionic bonds, nomenclature Covalent bonds	65 - 70 70 - 77
Mon, 10/5	Nomenclature, resonance Molecular geometry, polar compounds. Chemical reactions	77 - 82 82 - 89 92 - 99
Mon, 10/12	Redox reactions, concept of the mole Stoichiometry States of matter	99 – 109 109 - 116 120 - 128
Mon, 10/19	Intermolecular Attractions Solids Solutions and solubility	128 – 138 139 - 145 147 - 153
Mon, 10/26	<b>Exam #2</b> Units of concentration Water as a solvent	153 - 159 159 - 166
Mon, 11/2	Colligative properties Reaction rates Equilibrium Le Chatelier's principle	166 - 173 175 - 185 185 - 193 193 - 198
Mon, 11/9	Acids and Bases Acid-base equilibrium	200 - 206 207 - 217

	pH and pOH	217 - 222
Mon, 11/16	Buffers	222 - 231
	Radioactivity	233 - 240
	Half-life	240 - 249
Mon, 11/23	<b>Exam #3</b>	
	Thanksgiving break	
Mon, 11/30	Nuclear medicine	249 - 254
	Nuclear fusion	254 - 258
Mon, 12/7	Organic chemistry	260 - 266
	Functional groups	266 - 272

**FINAL EXAMINATION**      See exam schedule on university website

\* Each midterm exam is cumulative, but will emphasize the material covered since the previous midterm exam.

### SUGGESTED END-OF-CHAPTER PROBLEMS

Chapter 1:	13, 16, 17, 18, 20, 25, 26, 30, 35, 38, 43, 47, 57, 59, 66, 74, 80, 88, 90, 100, 101.
Chapter 2:	9, 10, 15, 16, 18, 20, 22, 24, 30, 32, 43, 45, 53, 75, 76, 79, 82.
Chapter 3:	18, 21, 22, 24, 28, 30, 32, 34, 42, 48, 50, 54, 56, 59, 75, 83, 88.
Chapter 4:	17, 19, 23, 26, 31, 32, 39, 42, 45, 46, 55, 57, 64, 67, 70, 74, 83, 87.
Chapter 5:	12, 15, 18, 20, 23, 30, 46, 50, 53, 62, 64, 70, 75, 82, 93, 96.
Chapter 6:	17, 23, 25, 28, 35, 37, 40, 44, 48, 59, 60, 67, 69, 76.
Chapter 7:	10, 16, 19, 26, 30, 33, 37, 38.
Chapter 8:	14, 16, 19, 20, 22, 30, 33, 37, 43, 45, 56, 66.
Chapter 9:	8, 10, 12, 15, 25, 26, 28, 31, 33, 39, 40, 53, 55.
Chapter 10:	15, 17, 24, 27, 29, 35, 54.

### GENERAL ADVICE REGARDING PROBLEMS

It is assumed that the good student will be able to work all the problems in the textbook (even the study problems in each chapter) even though, only some have been suggested. You must work lots of problems, even from other textbooks and study guides to be sure you understand and can use the concepts studied. It is not a good idea to try to memorize solutions to problems, since identical problems will not be used again. You also should determine ways to check the answer to a problem you have solved by application of common sense. Also, ask yourself how a problem might be rearranged as a possible test item. You will find this helpful in preparing for exams.

Compare your answers with other students. Remember that there is typically more than one possible solution to a problem! Be precise with your answers. On your exams, you will be graded on what you write, not what you meant to write, or thought you wrote. If your explanations do not make sense to your classmate, then they probably will not make sense to the exam grader.

### **CLASS ATTENDANCE POLICY**

All students are expected to attend class on a regular basis. The Department of Chemistry adheres to the attendance policy set by the University as stated in the most current Undergraduate Catalog. Being late by more than 5 minutes is equivalent to missing a lecture or laboratory. You must be on time in order to take an exam. Excessive absence is defined as missing more than 10% of the lecture or laboratory sessions without excusable reasons. Excessive absence will be reported to the Dean of the College and the Dean of Students, in accordance to the TAMU-Commerce Procedure A13.02. Good class attendance will be necessary in order to pass the course. If you miss more than 3 lectures prior to the first exam, the instructor reserves the right to drop you from the course. If you miss more than 6 lectures throughout the course of the semester, the instructor reserves the right to drop you from the course.

### **STUDENT CONDUCT POLICY**

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment (see Student's Guidebook, Policies and Procedures, Conduct). Any student engaging in disruptive behavior will be dismissed from class on the first offence. A second offence may constitute dismissal from the course with a failing grade.

### **CHEATING AND OTHER BREACHES OF ACADEMIC CONDUCT**

Academic cheating, plagiarism, and other forms of academic misconduct may result in removal of the student from class with a failing grade or may in extreme cases result in suspension or expulsion from the University as described in the "Code of Student Conduct" section of the "Student's Guidebook."

### **STUDENTS WITH DISABILITIES**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services  
Texas A&M University-Commerce, Gee Library, Room 132  
Phone (903) 886-5150 or (903) 886-5835  
Fax (903) 468-8148  
[StudentDisabilityServices@tamuc.edu](mailto:StudentDisabilityServices@tamuc.edu)

### **NONDISCRIMINATION STATEMENT**

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.