

GENERAL CHEMISTRY 1411

SECTION INFORMATION SHEET

FALL, 2009 SECTION 020 CAV211 MWF 9:00 AM - 9:50 AM
SECTION 060 CAV200 TTh 8:00 AM - 9:15 AM

Instructor: Kevin A. Boudreaux *Office Hours:* MWF 10 AM - 12 PM
Office: CAV207B TTh 9:30 AM - 12 PM
Phone: 942-2181 ext. 6623 (Chemistry Dept.) M-F 1 PM - 2 PM
e-mail: Kevin.Boudreaux@angelo.edu *and by appointment*

Textbook: Nivaldo J. Tro, *Chemistry: A Molecular Approach* (2008) [required]
Mastering Chemistry Student Access Kit [required]

Lab Manual: David Carter, Kevin A. Boudreaux, Nick Flynn, and Joe Velasquez, III,
Laboratory Manual for Chemistry 1411 (2008) [required]

The ancient teachers of this science [chemistry] . . . promised impossibilities and performed nothing. The modern masters promise very little; they know that metals cannot be transmuted and that the elixir of life is a chimera. But these philosophends seem only made to dabble in dirt, and their eyes to pore over the microscope or crucible, have indeed performed miracles. They penetrate into the recesses of nature and show how she works in her hiding places.

Mary Shelley, *Frankenstein* (1818)

Course Description: In this class, you will study the fundamental laws and theories of chemistry, chemical nomenclature, chemical equilibrium, metals and non-metals and their compounds, nuclear chemistry and the quantum theory of structure. Proficiency in algebra is required.

Grading: See main syllabus.

Chapter Schedule:

- Chapter 1 Matter, Measurement, and Problem Solving
- Chapter 2 Atoms and Elements
- Chapter 3 Molecules, Compounds, and Chemical Equations
- Chapter 4 Chemical Quantities and Aqueous Reactions
- Chapter 5 Gases
- Chapter 6 Thermochemistry
- Chapter 7 The Quantum-Mechanical Model of the Atom
- Chapter 8 Periodic Properties of the Elements
- Chapter 9 Chemical Bonding I: Lewis Theory
- Chapter 10 Chemical Bonding II: Molecular Shapes, VB Theory, and MO Theory
- Chapter 11 Liquids, Solids, and Intermolecular Forces

Attendance: Class roll will be taken regularly, and the attendance policy described in the 2007-2009 Undergraduate-Graduate catalog will be followed. Make-ups for exams or quizzes which have been missed for valid reasons must be taken *no later than one week following the absence*. No makeup assignments will be given unless a valid excuse is furnished. If you miss a class, it is your responsibility to find out what you missed.

Lab Course: The CHEM 1411 General Chemistry laboratory class accompanies this lecture class. The lab is designed to illustrate some of the principles involved in performing scientific measurements, handling chemicals, and performing chemistry experiments. In some cases, the experiments in the lab will introduce you to concepts *before* you cover them in the lecture course, and in some cases, the experiments will reinforce concepts already covered in the lecture course.

Labs will begin meeting during the first week of classes. Bring your calculator!

Proper attire (long sleeves, long pants, closed-toe shoes, and lab goggles) will be required in your laboratory section!

Reserve Material: Most of the slides which are projected on the LCD projector are available on my faculty web page at www.angelo.edu/faculty/kboudrea. (There is also a link to this page from the "Our Faculty" section of the Department of Chemistry and Biochemistry web page at www.angelo.edu/dept/chemistry/.) Homework and exam schedules, suggested problems, and other materials will also be posted here.

Most of the files will be in PDF format, which can be read using the free Adobe Acrobat reader (www.adobe.com). If you have trouble accessing these files, or you want the printout in some other page format, I can make a copy on a removable drive or blank CD-R.

The printed lecture notes do *not* contain all of the information presented during the class, such as solutions to the example problems. You should take good notes anyway.

Quizzes: Quizzes will be given *every week*, usually at the end of class on Fridays. They will be based on material presented since the previous quiz, and will be taken primarily from the problems in the textbook. There will be approximately 12 to 15 quizzes, worth 100 points each; the lowest two quiz grades will be dropped from the total; and the remaining quiz grades will be averaged together, with the computer homework scores, to make a 100 point grade.

Computer Homework: *Mastering Chemistry* is an online homework program designed to give both the student and the teacher information on class weaknesses and strengths. From your perspective, it is useful because you get immediate feedback. There will be approximately 15-20 graded assignments through the semester. These will be averaged together to give an overall 200 pt. grade. This system will be described in more detail in a separate handout.

Exams: Three hour-long exams, each worth 100 pts., will be given on **September 17/18**, **October 22/23**, and **November 19/20**. The problems from the textbook and the homework will be a good preparation for these exams.

Exams cannot be made up, except in the case of school-related functions (prior notification required), serious illness (note from a doctor, etc., required), or a death in the family.

If classes are cancelled on the day an exam is scheduled, assume that it will be given on the next class day.

Final Exam: The comprehensive (but not, I hope, incomprehensible) Final Exam will be on:

Section 020 (MWF 9 am): **Wednesday, December 9** from **8:00 AM to 10:00 AM**

Section 060 (TTh 8 am): **Tuesday, December 8** from **8:00 AM to 10:00 AM**

Half of the exam will be taken in part, but not totally, from the previous exams, suggested problem sets, and quizzes. The other half will be a standardized, multiple-choice American Chemical Society (ACS) exam. **Students who must miss the scheduled exam time must notify the instructor by noon of the day of the exam, otherwise no make-up provisions will be made.**

Review Sessions: Review sessions will be held weekly on Wednesdays at 5 pm (location to be announced later). During these sessions, I will work problems from the book, review concepts presented in the lecture, go over problems from the homework, or anything else that you may have questions about. These sessions should give you a chance to enhance your understanding of chemistry, and hence, your grade.

Tutoring sessions will be conducted by the local student affiliate section of the American Chemical Society (ACS). The time and location of these session will be announced later.

Studying and Homework: The lectures will follow the general format for the textbook; it is expected that you will read the appropriate sections in the textbook. In general, for any college-level class, you should be prepared to spend about 2-3 hours of studying for each hour of lecture.

In order to master chemistry, you **MUST WORK PROBLEMS**. This textbook has a good selection of problems within each chapter and at the end of each chapter. You should make an effort to work all of the problems within the text of the chapter; in addition, I will highlight some selected problems from the end of the chapter that you should try to work. You can expect to see a lot of these (or at least similar ones) on the exams.

Copies of the *Student Solutions Manual* will be on reserve in the library; in this book, all of the problems which have answers in the back of the textbook are worked out in full.

Textbook Web Site: The web site for this textbook is wps.prenhall.com/esm_tro_chemistry_1/. This site has a large number of activities, problems, and movie clips that reinforce many of the concepts presented in the class.

NOTES:

1. College classes are significantly more challenging than most high school classes. To get the most out of this class, you should study at least 2-3 hours for each hour of lecture.
2. Working problems is necessary for doing well in this class. Working a few problems of several different types each day is better than doing a whole problem set in one day and then not working on it for several days. It is not assumed that you have a prior background in chemistry, but if you do, that will be an advantage. If you do not have a strong chemistry background, you will need to work more than the assigned problems to get the necessary practice.
3. “Cramming” for exams is ineffective in the long run, since material that is learned in this way is easily forgotten. Those of you who will be taking other sciences classes, or are pre-med majors, will see a lot of this same material in organic chemistry, biochemistry, any future labs, the MCAT, etc. You should set aside regular times for studying for this course. Include some old material in each study session, since the material in chemistry is to a large extent interconnected and cumulative.
4. Pay attention to vocabulary. Many words have very precise meaning in science that have broader meanings in the English language. Many chemical names look or sound similar, but represent significantly different substances.
5. You must learn to solve complex scientific problems to be successful as a science or pre-med major. Good problem solving skills are learned slowly and require lots of practice. Seeing other work problems or working in groups to solve problems can greatly facilitate that process. Some suggestions for working in groups include working at a blackboard, and talking the problem through out loud.