

## Chemistry 1412—Syllabus Spring 2018

**Course:** Section 01      **Time:** 8:00-8:50 MWF      **Room:** CFS 121  
**Instructor:** Dr. Richard E. Norman      norman@shsu.edu      **Office:** CFS 317 A  
**Office Hours:** MWF 9:00 – 9:50      **Phone:** 294-1532 (dept)  
stop by or other times by appointment      294-1527 (direct)

**Text:** Brown, LeMay, Bursten, Murphy, Woodward and Stoltzfus  
*Chemistry The Central Science*, 14th Edition

**Prerequisites:** A grade of C or better in CHEM 1411.

The laboratory portion of this course counts for 20% of the overall grade. In order to make a C or higher in this course (which is the prerequisite for CHEM 2323), you must earn at least a C in both the lecture portion of the course **AND** in the laboratory portion of the course.

See your laboratory syllabus for details regarding the laboratory portion of the course.

**Attendance:** Attendance is required. I am required to take attendance. I will do this by assigning seats. If you are absent, it is your responsibility to obtain the lecture material that you missed. Occasionally, changes in schedule may be announced in class. These changes apply to you even if you were absent. Students who miss few classes tend to do better than students who miss repeatedly. However, class attendance will not specifically be used to evaluate student performance.

**Course Summary:** This is the second semester of general chemistry. This course is designed for science majors and minors including the following areas: chemistry, biology, physics, environmental science, geology, nutrition, and several preprofessional programs. CHEM 1412 may also be a prerequisite for another course in your major or minor field. Chemistry is the study of matter and its changes. The material is naturally cumulative. The course will cover Chapters 10, 11, 13 through 17, 19 through 21 and 23 of the textbook (but not in that order), and will emphasize quantitative aspects of equilibria and solution chemistry.

**Objectives:** Learn and master: thermodynamics, kinetics (including mechanisms), chemical equilibrium and the associated calculations (including simultaneous equilibria), redox balancing and electrochemistry, fundamentals of metal complexes and nuclear "chemistry".

**Calculator:** The only calculator that you will be allowed to use on exams is a TI-30X.

**Lecture Grading:** There will be 4 tests and a **comprehensive** final. Each test will be worth 100 points, and the final will be worth 200 points (for a total of 600 points). Grades will be based on the performance of a mythical "top student". This is the sum of the highest scores earned by any student on the exams. In the event that class size drops to 20 or less, I may decide that the "top student" is perfect. 87.5% of the "top student's score" (TSS) will be the A cutoff, 75% TSS will be the B cutoff, 62.5% TSS will be the C cutoff, and 50% TSS will be the D cutoff. I reserve the right to lower the cutoffs (but I will **NOT** raise them).

<u>Anticipated date</u>	<u>Exam</u>	<u>Points</u>	
February 12, Monday	1st Exam	100 pts	
March 5, Monday	2nd Exam	100 pts	Last Day to Q drop <b>April 6</b>
April 2, Monday	3rd Exam	100 pts	
April 30, Monday	4th Exam	100 pts	Last Day May 4
May 7, Monday	Final	<u>200 pts</u>	8:00-10:00
Total		600 pts	

Make-up examinations will **not** be given. Only the instructor can excuse a student from an examination. If you are excused from an examination, a score for the exam you missed will be calculated based on your average class ranking on all of the other examinations (including the final).

**Overall Course Grading:**  $0.80 * (\text{lecture grade}) + 0.20 * (\text{laboratory grade}) = \text{course grade}$   
(A C in the lecture portion and in the laboratory portion of the course is necessary for an overall grade of C.)

**Cheating:** Cheating will not be tolerated. For a first offense, a zero will be given for the entire exam (even if it is the final). A second offense earns an F in the course. While I make no attempt to provide a complete list of the various ways or types of cheating, the use of notes, looking at another student's paper, the use of a cell phone, all during an examination, are examples of cheating.

There are several issues that should be included in all syllabi. Beyond what I provide here, additional details may be found at <http://www.shsu.edu/syllabus>. **Academic Dishonesty:** Students are expected to maintain honesty and integrity in the academic experiences both in and out of the classroom. **Classroom Rules of Conduct:** Students are expected to assist in maintaining a classroom environment that is conducive to learning. Students are expected to treat faculty and students with respect. Students are to turn off all cell phones while in the classroom. Under no circumstances are cell phones or any electronic devices (other than those explicitly allowed by the instructor) to be used or seen during exams. Students may tape record lectures provided they do not disturb other students in the process. **Student Absences on Religious Holy Days:** Students are allowed to miss class and other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. Students remain responsible for all work. **Students with Disabilities Policy:** It is the policy of Sam Houston State University that individuals otherwise qualified shall not be excluded, solely by reason of their disability, from participation in any academic program of the university. Further, they shall not be denied the benefits of these programs nor shall they be subjected to discrimination. Students with disabilities that might affect their academic performance should visit with the Office of Services for Students with Disabilities located in the Counseling Center. **Visitors in the Classroom:** Only registered students may attend class. Exceptions can be made on a case-by-case basis by the instructor. In all cases, visitors must not present a disruption to the class by their attendance. Students wishing to audit a class must apply to do so through the Registrar's Office.

**Words of Wisdom:** I encourage you to form small study groups to discuss the homework and material for this course. While homework will not be graded, it will have a dramatic effect on your learning. Whether you are giving or getting help in your group, you benefit from the interaction.

Chemistry is a subject that many people find difficult. Learning chemistry requires a considerable time commitment. This course may occupy as much of your time as possibly two other typical courses. Be prepared to spend time on studying chemistry **each day**. Don't plan on doing all of your studying on the night before, or even several nights before the exam! **Study regularly.** Chemistry is inherently comprehensive. All of the subjects build on what has gone before. If you fail to keep up, you will find yourself hopelessly buried and behind. Catch-up is a losing game.

The importance of doing problems cannot be overemphasized! This is the only way to learn the subject. The more problems you solve, the better prepared you will be for the exams. And while we are talking about working problems, be sure that you do not misuse the Solutions Manual. The proper way to tackle the problems is to work at them, struggle with them, and **ONLY after you have arrived at a solution** should you refer to the answers. It is too easy and sometimes too tempting to look at the problem, immediately look at the answer, and then try to tell yourself that you understand how to do the problem. This is always a disaster!

**Elements to know** and love (by atomic number): 1-38, 42, 46-48, 50-56, 78-80, 82, 83, 86-88, and 92-94.

**Other memorization:** Tables 2.4 and 2.5; names & formulas of strong acids & bases (Table 4.2).

Work as many problems as it takes to understand the material. If that is more than the suggested problems, there are certainly others in the textbook. If that is less than the suggested problems, that is fine. The goal is understanding.

### **Suggested Problems:**

Chapter 10: 17,21,23,33-37(odd),43,49-53(odd),57-65(odd),73,81(a only),85,87.

Chapter 14: 19-25(odd),29-37(odd),41-49(odd),53,55,59-63(odd),67-73(odd),79,107,110.

Chapter 15: 1,5,6,11-17(odd), 21-61(odd).

Chapter 16: 1,5,11,15,19-51(odd),55-61(odd),67-97(odd),101,116,119.

Chapter 17: 1,7,9,15,19-75(odd),89,91.

Chapter 11: 6,9,15-21(odd),25,33,39-45(odd),49-55(odd),59.

Chapter 13: 9,15,19-27(odd),37,41-45(odd),49-55(odd),61-65(odd),69,73-81(odd).

Chapter 19: 1,4,7,11,15,21,23,33,35,39,41,51,57-61(odd),65,67,77-83(odd).

Chapter 20: 7,15-25(odd),29,33-55(odd),63-75(odd),87,91,97.

Chapter 23: 2,15,17,23-29(odd),35-45(odd),57,61-65(odd),82.

Chapter 21: we'll see