

## **CHEM 1303 – GENERAL CHEMISTRY I**

### *Course Description*

CHEM 1303 is the first part of the one-year CHEM 1303-1304 sequence. This course is designed primarily for science majors, premed students, and engineering students, and offers an introduction to the fundamental principles and theories of chemistry. In CHEM 1303, the student will be introduced to topics including stoichiometry, the structure of matter, descriptive chemistry, thermodynamics and the behavior of solutions. CHEM 1303 is a prerequisite to all advanced courses in the department of chemistry. The anticipated small class size and fast pace of the May term should appeal to motivated students desiring a concentrated learning experience with more individualized faculty-student communication. This course is particularly well suited to students who have had strong high-school chemistry courses. The May-term course is fully equivalent to CHEM 1303 offered during the regular fall semester, and will contain the normal lecture materials. To accommodate the shorter 11-day schedule, we will include more class time devoted to working actual problems as opposed to a straight lecture style. To compensate some material will be provided as assigned reading. Completion of this course in the May term will enable the student to gain a head start on academic requirements whether they are for a science or engineering major, or the premedical/dental curriculum.

### *Modification of Course to Condensed format.*

A typical fall semester 1303 course consists of 2100 minutes of class time with an addition 180 minutes (2280 total) for the final exam. The May-term will consist of 11 days of four hours of instructional time each. This amounts to 2640 minutes of available face time. Despite ample time to cover all the material in the same format as Fall CHEM1303, modifications to the course will be required to alleviate insufficient out of class study-time.

To facilitate the development of knowledge in the course I plan to devote each class period to 1 chapter, with the first chapter having been conducted out of class prior to the first day. We will then devote the first 30-40 minutes of each day to conducting problem solving sessions involving the previous day course material. Such hands on efforts should cement course material into the student's minds and facilitate a positive learning environment.

### *Instructor Bio*

Dr. Brian Zoltowski is an assistant professor in the department of chemistry at SMU. Dr. Zoltowski holds a Ph.D. from Cornell University, and has taught at SMU for 3 years. Dr. Zoltowski has taught general chemistry 1303 and 1304 over the past two years and received excellent student reviews. Dr. Zoltowski conducts research in the areas of photochemistry and structure and function of circadian clock photoreceptors.

### *Course learning objectives*

By the time a student finishes this course, he/she will be able to:

- Demonstrate basic facility with the methods and approaches of scientific inquiry and problem solving.
- Explain how the concepts and findings of science or technology in general, or of particular sciences or technologies, shape our world.

More specifically, the student will be able to:

- Predict the macroscopic properties of solutions.
- Describe a chemical reaction in terms of the molar coefficients and predict product yields.
- Describe the structure of an atom and spatial arrangement of bonds in molecules
- Interconvert between systems of units and describe chemical processes in terms of energy.

Approved for Pure and Applied Sciences Pillar, level one for Undergraduate Curriculum.

### *Benefits of taking this course in the May-Term*

- Students will be able to focus exclusively on this course.
- Numerous breaks will be scheduled for problem sessions and review.
- Small class size allows for individualized faculty-student interactions.
- Students will be free from taking CHEM 1303 during the Fall, making it possible to substitute other courses to fulfill general education or major requirements.

## *Syllabus*

Chemistry 1303

General Chemistry

May-Term

### First Day Information and Checklist

Most course information is on Blackboard

For First lecture:

1. Read the entire document titled "General Information and Syllabus". Download it from Blackboard.
2. Download the calendar for the course from Blackboard. The pdf file contains the dates for lectures, exams and quizzes.
3. Buy a cheap (not programmable) calculator (details to be explained).
4. Read Chapter 1 and complete homework. (11<sup>th</sup> edition, Chang)
5. Learn names (including correct spelling) and symbols for the first 36 elements of the Periodic Table. Start learning the names and structures of polyatomic ions (Chapter 2, last page of notes).

Other items:

1. The May-term CHEM1303 is an accelerated version of the normal fall semester course. All material will be covered in the same format as Fall 1303 but in a more condensed schedule. Be sure to keep up with the course readings and problems.

## General Chemistry 1303: General Information and Syllabus

Instructor: Professor Brian Zoltowski, Ph.D.

Office: FOSC 307

Telephone: 214-768-2640

Email: [bzoltowski@smu.edu](mailto:bzoltowski@smu.edu)

Office Hours: TBA

### Textbook

Chang, Raymond Chemistry, 11<sup>th</sup> ed., McGraw Hill: New York 2010. The textbook should be used extensively, for additional and alternative explanations of concepts covered in lectures, as a source of practice problems, homework, etc. During the Fall 2011 semester, chapters 1-1 will be covered. Make sure you do all assigned homework problems.

### Documents available to download (Blackboard)

- General information and syllabus (this document)
- Class calendar/schedule. It shows all exams will be given, as well as the chapters that will be covered each week.
- Homework assignments.
- Lecture notes:

### Important information and checklist

Hard copies of first day information and student info forms will be distributed at the first class meeting. Please fill out the student information sheet and return it to me before leaving.

Grading Final course grade is calculated based on your performance in the exams, quizzes and homework, as follows:

Three exams	72%
Final Exam	28%

### Attendance

Attendance will be taken periodically. It is unwise to assume you can keep up with this course by only reading the notes! Come to class!

### Exams

There will be three exams. The final exam is scheduled for the end of class on May 3 .

Important note: You cannot take the final exam at any other time. Absolutely no exceptions!!! This is University policy.

#### Notes on exams and homework

- If the words SHOW ALL WORK appear on a section of an exam or homework, it means that you must show a clear, logical method, ***including all units***, for all quantities. In such cases, the right answer is worth nothing unless your work is properly shown. Points will be deducted if either of these is not clear (units and work).
- ***All answers must be given with the proper units.*** Failure to include correct units may result in no points being awarded even if the answer is correct.
- Answers to questions. Make sure you erase or cross out clearly all but one answer or solution for each problem on your exam or homework, i.e., the one that you want to be considered for grading. When several answers or solutions appear on your worksheet or answer sheet and it is not clear, which is intended to be graded, you will not get credit. Even if one of the answers is correct, it will not be counted as a correct answer. This obviously does not apply to cases where the student is asked to provide alternative solutions, or where all provided answers or solutions are correct.
- Decimals. The proper way to write “decimal fractions: is to put a zero before the decimal point. This emphasizes the decimal and avoids critical mistakes. Thus, 0.769 is correct, while .769 is not. Whether one is reading newsprint, a blackberry or iPhone or a handwritten lab report, a tiny decimal point can easily be missed. Get in the habit of writing a zero before the decimal point now. Starting with first exam you will be deducted points for not including the zero.
- Calculators. You must have a simple, non-programmable scientific calculator (must do logarithms and exponential notation). If it costs more than \$10-15, it probably will not be allowed during exams and quizzes. Some tips: nothing higher than a TI-30; acceptable calculators include Casio fx-260solar or a IT 25x (<\$10 at Target or Walmart). *Be sure that you are familiar with the function of your calculator and make sure you know how to use it way before the first quiz or exam.* A good way to accomplish this is to **ALWAYS** use it to do your homework.

#### Make-up exams

- In the interest of fairness, the only time make-up EXAMS will be given is in the case of a documented illness or a death in the immediate family.
- Documentation requires a written letter from the student and, in the case of illness, a note from a doctor or the health center. This must include a phone number for verification.

- Make-up exams may be either written or oral and will be given at the end of the semester at the discretion of the instructor.
- The results of a make-up exam will be counted in the calculation of your final grade.
- 

#### Rules for exams

- Only the specific type of calculator described above is allowed. No other electronic devices will be allowed at your desk.
- NO cell phones, laptops, tablets or electronic devices are allowed!
- You may not leave class early on exam and quiz days unless you have been given permission from the instructor.

#### SMU Honor Code

Read the SMU Honor Code (especially the first four paragraphs) at

[http://www.smu.edu/student life/PCL\\_05\\_HC.asp](http://www.smu.edu/student%20life/PCL_05_HC.asp)

In addition to the penalties given by the SMU Honor Council, the instructor will give a zero for any work, on which unauthorized assistance was received, and this is NOT a grade that will be dropped or substituted. You will see the following pledge on each quiz and exam:

On my honor, I have neither given nor received unauthorized aid on this exam.

Signed \_\_\_\_\_ Date \_\_\_\_\_

All exams will be photocopied after grading and prior to being returned to the student.

#### Assistance

- Do not be afraid to ask for help!
- If you need to see me beyond my office hours, please see me after class, send an email or call me to set up an appointment.
- We cannot help you if you do not let us know you are struggling.
- The class email list (SMU email addresses only) is used to send corrections to homework answers, changes in office hours and other announcements via email. Also check the Announcements on the Blackboard for this or additional information.
- Disability Accommodations: Students needing academic accommodations for a disability must first contact Disability Accommodations & Success Strategies (DASS) at 214-768-1470 or [www.smu.edu/alec/dass.asp](http://www.smu.edu/alec/dass.asp) to verify the disability and to establish eligibility for accommodations. They should then schedule an appointment with the professor to make appropriate arrangements. See University Policy No. 2.4.)

- Religious Observance: Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester, and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence. (See University Policy no. 1.9.)
- Excused Absences for University Extracurricular Activities: Students participating in an officially sanctioned, scheduled University extracurricular activity will be given the opportunity to make up class assignments or other graded assignments missed as result of their participation. It is the responsibility of the student to make arrangements with the instructor prior to any missed scheduled examination.(University Undergraduate Catalogue)

#### DO NOT FALL BEHIND!!!!

General Chemistry requires disciplined study habits. This means keeping up with the material on a day-by day basis (a minimum of 12-15 hours of concentrated, quality study time per week is probably about average). Work all of the assigned problems with the objective of understanding the concept, not just getting the right answer. Do all the homework to identify what you do not understand and what you do not understand about it. Identifying what and why you do not know something will allow us to help you learn the material you find difficult. NEVER give up on a problem.

#### Learning outcomes

- Demonstrate basic facility with the methods and approaches of scientific inquiry and problem solving in the areas covered by the material listed in the lecture outlines and in Chapters 1-11 in the textbook.
- Explain how the concepts and findings of science or technology in general, or of particular sciences or technologies, shape our world.

-

### *Course learning objectives*

By the time a student finishes this course, he/she will be able to:

- Demonstrate basic facility with the methods and approaches of scientific inquiry and problem solving in the areas covered by the material listed in the lecture outlines and in Chapters 1-11 in the textbook.
- Explain how the concepts and findings of science or technology in general, or of particular sciences or technologies, shape our world.

More specifically, the student will be able to:

- Predict the macroscopic properties of solutions.
- Describe a chemical reaction in terms of the molar coefficients and predict product yields.
- Describe the structure of an atom and spatial arrangement of bonds in molecules
- Interconvert between systems of units and describe chemical processes in terms of energy.

### *Reading List and Preparative Assignments*

- Chang, Raymond Chemistry, 11<sup>th</sup> ed., McGraw Hill: New York 2010.
- Chapter 1 should be read before the first day of class.
- The following homework problems for Chapter 1 should be completed before attending class on the first day.

Chapter	Problems
1	4, 7, 8, 9, 12, 16, 22, 24, 25, 26, 29, 30, 32, 33, 34, 36, 44, 46, 48, 58, 59, 60, 61, 64, 67, 75, 78, 87, 88, 90, 91, 115

### *Instructional Support and Technology*

- A room with an overhead projector is required. The ability to project onto a screen and still use the chalkboard would be desired. FOSC Rm 152 is ideal.

### *Instructional Support and Technology*

- Compensation will be at 10% of the instructors base salary. Currently, 10% of base amounts to \$7684 for this course.

### *Benefits of taking this course in the Oc{-Term*

- Students will be able to focus exclusively on this course.
- Numerous breaks will be scheduled for problem sessions and review.
- Small class size allows for individualized faculty-student interactions.
- Students will be free from taking CHEM 1303 during the Fall, making it possible to substitute other courses to fulfill general education or major requirements.