

# **CHEM 1304: General Chemistry II**

Jan Term, 2019

January 7–16, 2019

9am to noon, 1pm to 4pm; no class on weekend

Instructor: Professor David Son

email: [dson@smu.edu](mailto:dson@smu.edu)

Location: SMU main campus, room TBD

## **Course Description**

CHEM 1304 is the second 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 1304, the student will be introduced to topics including solution chemistry, equilibrium, thermodynamics, electrochemistry, polymer chemistry, and organic chemistry. CHEM 1304 is a prerequisite to all advanced courses in the department of chemistry. The anticipated small class size and fast pace of the Jan Term should appeal to highly motivated students desiring a concentrated learning experience with more individualized faculty-student communication. This Jan Term course is fully equivalent to CHEM 1304 offered during the regular spring semester. Completion of this course in the Jan 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.

## **Instructor Bio**

Dr. David Son is a professor in the SMU Department of Chemistry. Dr. Son holds a Ph.D. from M.I.T., and has taught at SMU for 23 years. At SMU, Dr. Son has taught general chemistry for 17 years, and has additionally taught lecture and laboratory courses in organic and advanced inorganic chemistry. Dr. Son has taught CHEM 1304 each year during the Jan Term since its inception in 2010. Dr. Son was recognized by SMU students as a HOPE honoree (Honoring our Professors' Excellence) in 2003, 2011, 2012, and 2014, and in 2011 was named a Ruth Altshuler Distinguished Teaching Professor by SMU. Dr. Son conducts research in the areas of organometallic and polymer synthesis, and he is also the Faculty-in-Residence at Boaz Commons on the main SMU campus. His webpage is <http://faculty.smu.edu/dson>.

## **Benefits of taking this course in the Jan 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 1304 during the spring or summer, making it possible to substitute other courses to fulfill general education or major requirements.

Textbook: Chang, **Chemistry**, 11<sup>th</sup> edition

All course communications and documents will be maintained through **Canvas** (<http://smu.instructure.com>). Most relevant information will be in the Modules section.

## **Learning objectives**

The primary objective is for the student to be able to take the specific skills and accomplishments described below and apply, translate, and extrapolate these thought processes to solving problems throughout life. In general, the student will:

- demonstrate basic facility with the methods and approaches of scientific inquiry and problem solving.
- be able to 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 the mathematical relationships between chemical kinetics, equilibria, and thermodynamics.
- Mathematically analyze acid-base behavior in titration reactions.
- Predict the feasibility of various redox reactions, and apply this knowledge to everyday systems.
- Explain the basic structural concepts of both small and large (polymeric) organic compounds.
- Understand the chemical nature of radioactivity, and its practical applications.

## **Class format**

Due to the time-intensive format of Jan Term, attendance is mandatory. Several breaks will be scheduled during the day. Furthermore, homework and review sessions will be scheduled during normal class hours.

## **Homework**

Homework problems will be assigned for each chapter, but you will not be required to turn them in. However, knowing how to do the problems is *essential* to doing well on the exams.

## **Grading**

Four exams – 100 points each, 400 points total  
TOTAL = 400 points

Exam grades will be curved, based on grade distributions from previous classes. For all exams, you are responsible for information given out in class that may not be in the text or lecture outlines. Plus and minus grades will be assigned at the end of the term.

### **Pre-class Assignment (important!)**

Due to the fast-pace of this course, you should be familiar with certain background topics from CHEM 1303 (General Chemistry 1). Please read the following chapters from the text in preparation for this course:

- Chapter 1, Section 9
- Chapter 3, Sections 8, 9
- Chapter 4, Sections 3, 4, 5, 7
- Chapter 5, Sections 3, 4, 5, 6, 7
- Chapter 6, Sections 2, 4, 6
- Chapter 11, Sections 1, 2

### **Class Schedule**

Monday, January 7

- Chapter 12
- Chapter 13

Tuesday, January 8

- Chapter 14
- Homework and review

Wednesday, January 9

- *Exam #1 (Chapters 12-14)*
- Chapter 15
- Chapter 16

Thursday, January 10

- Chapter 16
- Homework and review

Friday, January 11

- *Exam #2 (Chapters 15 and 16)*
- Chapter 17
- Chapter 18

Monday, January 14

- Chapter 18
- Homework and review

Tuesday, January 15 (last day to drop and receive a 'W')

- *Exam #3 (Chapters 17 and 18)*
- Chapter 19

- Chapter 24

Wednesday, January 16

- Chapter 24
- Chapter 25
- Homework and review
- *Exam #4 (Chapters 19, 24, and 25)*

### **Office hours**

I will have no formal office hours. Ample time will be provided during the day to address any questions. Emailed questions during the evening are also welcome.

### **Other Information**

- Make-up exams will only be given under special circumstances. Social obligations or lack of preparation is not an acceptable excuse for missing an exam.
  - If you miss an exam due to an illness, you will need to provide an Absence from Class Form (see SMU policy below).
  - If you miss an exam due to any other emergency, you will need to sign and submit a written note explaining the circumstances.
  - If you know in advance that you will have to miss at least one day of class, *you should probably not sign up for this class.*
- All students are expected to abide by the SMU Honor Code.

### **SMU policies**

*Disability Accommodations: Students needing academic accommodations for a disability must first register with Disability Accommodations & Success Strategies (DASS). Students can call 214-768-1470 or visit <http://www.smu.edu/Provost/ALEC/DASS> to begin the process. Once registered, students should then schedule an appointment with the professor as early in the semester as possible, present a DASS Accommodation Letter, and make appropriate arrangements. Please note that accommodations are not retroactive and require advance notice to implement.*

*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 should be given the opportunity to make up class assignments or other graded assignments missed as a result of their*

*participation. It is the responsibility of the student to make arrangements with the instructor prior to any missed scheduled examination or other missed assignment for making up the work. (University Undergraduate Catalogue)*

*Student Learning Outcomes: Please include in your syllabi all student learning outcomes, both those specific to your course, as well as those that satisfy major and general education requirements.*

*Final Exams: Final course examinations shall be given in all courses where they are appropriate, and some form of final assessment is essential. Final exams or final assessments must be administered as specified in the official examination schedule, and shall not be administered during the last week of classes or during the Reading Period. Please state clearly in the syllabus the date/time and form of the final exam or assessment.*

### **Medical policy**

*Excused Medical Absences: Verification of medical illness and request for an excused absence from class will be handled in one of two ways. A physician or staff member from health/counseling and testing will provide either (1) a hand written note on a Health Center prescription form or 2) a signed letter written on Health Center stationery. Excused medical absences shall have specific dates of time periods indicated. Encounter Forms and Walk-Out Statements verify a student's visit to the Health Center BUT DO NOT INDICATE AN EXCUSED MEDICAL ABSENCE.*