Upon completing this course successfully, you will:

- Understand the structure of matter and the types of energy associated with chemical transformations.
- Understand how experimental data guides the development of conceptual models.
- Be able to explain complex phenomena by combining simple chemical principles.
- Be prepared for the study of chemical dynamics in Chem 31B: Chemical Principles II.

Objectives in Chem 31A:

- Construction of your own conceptual understanding of the material through a progressive sequence of experimental observation, reading, group discussion and argument, writing, and problem solving.
- Application of critical thinking skills to analyze and solve problems in chemistry.
- Development of communication skills for discussing chemistry and the ability to explain thought processes and conclusions verbally and in writing.
- Demonstration of your command of chemical data, conceptual models, problem solving and scientific communication in written exams.

Learning environment:

- Two-week learning cycle: You will first observe and experiment with physical and chemical materials to gain experience with the fundamental chemical phenomena covered in that cycle. These observations and measurements will be summarized in a short written report. Through reading, guided inquiry, and a problem set, you will develop your conceptual understanding of the phenomena and your ability to use that understanding to solve chemical problems. Finally, you will take an exam at the end of the two-week cycle.
- Data-driven model: Normally, each topic will be developed from empirical data and generalized to a conceptual model that explains a broad range of phenomena.

General Information and Course Structure

Instructor: Professor Chris Chidsey
chidsey@stanford.edu
phone: 650-725-1751
office: Stauffer I 103A

Teaching Assistants:

Dan Daranciang - Head TA
daranciang@stanford.edu

Jeff Jensen – TA
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Hailiang Wang – Admin TA  hailiang@stanford.edu
Charles McCrory – Outreach TA  cmccrory@stanford.edu
Kevin Kent – Section Management TA  kpkent@stanford.edu

Web Site:  www.stanford.edu/class/chem31a is the publicly accessible portion of the website. A few hours after registering for Chem 31A on Axess, you will have access to the full CourseWork Web site for Chem 31A. You must be registered for this class in Axess to enter CourseWork.


Required PRS Transmitter:  You must purchase a PRS transmitter (available from the Stanford Bookstore) to answer questions which may be posed during any lecture. In addition, short PRS quizzes will be given at the beginning of lectures on days when an assigned reading is due. These quizzes will provide you, as well as the professor, with immediate feedback as to your understanding of the current material.

Please register your PRS transmitter on CourseWork by Wednesday (9/26) at 10:00 a.m.


Lectures:  MWF 1:15-2:05 p.m.  Hewlett 200

Office Hours:  Office hours are available for students who need further clarification of concepts presented in lecture, or have made solid attempts on the homework assignment or other practice problems and require further assistance understanding how to approach such problems. Students are highly encouraged to rework misunderstood problems from returned exams and then discuss them with a TA or the professor during office hours.

Times TAs:  Su 7-10 p.m.  300-300
Tu 1-4 p.m.  
Tu 7-10 p.m.  
Mudd 237  
50-51B

Prof. Chidsey:  
WF 2:15-3:30 p.m., or by appointment  
Stauffer I 103A

Sections:  
Required discussion sections will be held on Thursday through Friday mornings. Section provides hands-on and guided-inquiry activities designed to demonstrate, build and reinforce general chemistry principles through small group learning.

Sign up for section in CourseWork between Thursday, 9/20 and 3 p.m. Tuesday, 9/25. Your section assignment will be posted to CourseWork by 1:15 p.m. on Wednesday, 9/26.

Outreach:  
Outreach workshops will be held on Mondays to build basic problem-solving skills through practice exercises. Guided by an advanced TA, Outreach provides a structured environment for you to develop your skills, to go over the material at a slower pace, and to discuss questions with peers. The exercises used in the Outreach workshops will be posted on CourseWork. Attendance is optional.

Time:  
Mondays, 7-8 p.m.  
Hewlett 200

Graded  
This course is graded on a 1000 point basis.

Work:  
Completing the conceptual questions assignment will be worth 10 pts.

Section participation will be worth 5 pts per week, minus 1 pt for every minute that you are late (cell phone time) for section. (Total of 50 pts.)

There will be four short reports (1-3 pages) on activities in section. You are allowed and indeed encouraged to discuss the activities with others prior to writing your report, but the actual report must be solely yours. You or a friend must submit your report by 1:15 p.m. (cell phone time) before lecture on the day listed in the calendar. Each report will be graded for content and composition and will be worth 10 pts, minus 2 pts for every minute it is late. (Total of 40 pts.)

There will be at least 30 in-lecture PRS quiz questions throughout the quarter, related to the assigned reading/problem sets. Your best 20 quiz answers will each be worth 2 pts. (Total of 40 pts.)

There will be additional PRS questions throughout the quarter. You will receive 1 pt for each of the first 10 that you answer, whether you are correct or not. (Total of 10 pts.)

There will be five handwritten problem sets. You will have 7 days to complete each one. You are allowed and encouraged to work on the problems with others, but you must compose your answers to each problem set on your own. You or a friend must submit your problem set by 1:15 p.m. (cell phone time) before lecture on the day listed in the calendar. A substantially correct set of solutions will receive 10 pts, minus 2 pts for every minute it is late; a marginal set will receive 5 pts, minus 2 pts for every minute it is late; and an unsatisfactory set will receive 0 pts. A detailed answer key will
be posted immediately after the problem set is due, in order for you to make a detailed assessment of your own comprehension. (Total of 50 pts.)

Lastly, there will be four 60-minute exams on Wednesday evenings from 7-8 p.m. The first will be worth 50 pts, the second will be worth 90 pts, and the third and fourth will each be worth 130 pts. The final exam will be on Monday, December 10, 8:30-11:30 a.m., and will be worth 400 pts. Exams may be written in pencil. (Total of 800 pts.)

You cannot enroll in classes or other activities that conflict with any of the exams, the lectures or your assigned section. Requests for alternate arrangements for approved University reasons must be requested from the head TA at least one week in advance.

Exam Regrades: Regrade requests must be turned in to the head TA no later than 5 days after the exam is returned—that is, at the beginning of lecture on the Wednesday following the exam. The original, unaltered exam must be accompanied by a typed cover letter clearly explaining why your work merited more points. Please note that when an exam is submitted for regrade, the head TA will reevaluate the entire exam, not just the problems that you request. This can result in either a net gain or loss of points. Copies of graded exams are kept on file to monitor both grading consistency and Honor Code violations.

Students with Disabilities: If you have a disability that may necessitate an academic accommodation or the use of auxiliary aids and services in class, you must initiate the request with the Disability Resource Center (563 Salvatierra Walk, 650-723-1066 voice, 650-725 1067 TTY).

Letter Grade: Your course grade will be determined on an absolute basis. Your letter grade will correspond to the following overall fractions of your total possible score:

- A+: 95% - 100%
- A: 90% - 94.9%
- A-: 85% - 89.9%
- B+: 80% - 84.9%
- B: 75% - 79.9%
- B-: 70% - 74.9%
- C+: 65% - 69.9%
- C: 60% - 64.9%
- C-: 55% - 59.9%
- D+: 50% - 54.9%
- D: 45% - 49.9%
- D-: 40% - 44.9%
- NP: Less than 40%