

Chemistry 31A Autumn 2006

Chemical Principles I: Structure & Energetics

Professor Chidsey

Upon successful completion of this course:

- You will understand the structure of matter and the types of energy associated with chemical transformations.
- You will understand how experimental data leads to the development of conceptual models.
- You will combine chemical principles to explain complex phenomena.
- You will be prepared to study chemical dynamics in Chem 31B: Chemical Principles II.

Skills developed in Chem 31A:

- Construction of your own conceptual understanding through a progressive sequence of observation, reading, group discussion and argument, writing, and problem solving.
- Application of your critical thinking skills to analyze and solve problems in chemistry.
- Communication skills for discussing chemistry and explaining your conclusions in writing.
- Demonstration of your command of scientific data and conceptual models in written exams.

Learning environment for Chem 31A:

- 2-week learning cycle: You will first observe and experiment with physical and chemical materials to obtain experience with the fundamental chemical phenomena covered in that cycle. You will analyze your observations and measurements in a short written report. Reading and guided inquiry will further develop your conceptual understanding of the phenomena. You will then work a problem set using the concepts you have developed. Finally, you will take an exam at the end of the two weeks.
- Data-driven model: Each topic will be typically developed from empirical data to a conceptual model that explains a broad range of phenomena.

General Information and Course Structure

Instructors: [Professor Chris Chidsey](#)
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Teaching Assistants: Jennifer VanOverbeke - Head TA vanoverb@stanford.edu
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Web Site: www.stanford.edu/class/chem31a is the publicly accessible website. A few hours after registering for Chem 31A on Axess, you will have access to the full CourseWork Chem 31A website.

Required Text: Spencer, Bodner and Rickard, Chemistry: Structure and Dynamics, 3rd Ed., 2005.

Required PRS transmitter: You must have a PRS transmitter (available from the bookstore) to answer questions posed during lecture. 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 professors, with immediate feedback as to your understanding of the current material.
Please register your PRS transmitter on coursework by Wednesday (9/27) 10:00 AM.

Optional Texts: Grushow, Student Solutions Manual for Chemistry: Structure and Dynamics, 2005.
 Criddle and Godnick, The Cartoon Guide To Chemistry, 2005.

Lectures: MWF 1:15-2:05 [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:	Sunday 7-10 pm	Location: 60-62A
	Tuesday 1-4 pm	Location: Mudd 281
	Tuesday 7-10 pm	Location: 60-62A

Prof. Chidsey: Tue and Fri 2:15-3:30 pm Location: Stauffer I 103A

Sections: Sections will be held on Thursdays and Friday mornings. During Section, students will participate in hands-on and paper-only activities that will demonstrate and build general chemistry principles through group learning. Attendance is mandatory.
Please sign-up for section in Coursework (you must be registered in Axxess to enter the Coursework site and sign-up for sections). Section sign-up in coursework will start on Thursday 9/21 and end at 3pm on Tuesday 9/26. Your sections assignments will be posted in coursework by lecture on Wednesday 9/27.

Outreach: Outreach workshops will be held on Monday and every other Wednesday evenings (not held on the Wednesday evening following an exam) to help build basic problem-solving skills through practice exercises. Outreach provides a structured environment for students to develop their skills at a slower pace and to discuss questions with peers and an advanced TA. Exercises covered will be posted on the class website. Attendance is optional.

Times and locations: Mon and every other Wed 7-8 pm in Hewlett 200.

Graded Work: *This course is graded on a 1000 point basis.*

Completing the conceptual questions assignment will be worth 10pts.

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

There will be four short reports (1-3 pages) on activities in Section. You are encouraged to discuss the activities with others prior to composing your report, but the actual report must be solely your composition. You or someone else must submit your report by 1:15pm 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 10pts minus 2pts for every minute it is late. (total 40pts)

There will be at least 30 in-lecture quiz questions throughout the quarter associated with the reading/problem assignments. Your best 20 quiz answers will each be worth 2pts. (total 40pts)

There will be additional PRS questions throughout the lectures. You will receive credit worth 1pts for each of the first 10 that you answer whether correct or not. (total 10pts)

There will be five written problem sets for the course. You will have 7 days to complete each problem set. You are 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 1:15pm cell phone time before lecture on the day listed in the calendar. A substantially correct set of solutions

will receive credit worth 10pts minus 2pts for every minute it is late, a marginal set will receive a maximum of 5pts and an unsatisfactory set 0pts. A detailed answer key will be posted immediately after the problem set is due to allow you to make a detailed assessment of your own performance. (total 50pts)

There will be four 50-minute exams on Wednesday during class from 1:15 to 2:05. The first will be worth 50pts, the second 90pts, and the third and fourth will each be worth 130pts. The final exam will be on Friday, December 15, 8:30-11:30am and will be worth 400pts of your grade (total 800pts). Exams may be written in pencil.

You must not enroll in classes or other activities that conflict with any of the exams 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. The exam must be accompanied by a cover letter explaining why you are seeking a regrade. Once submitted, any part of the exam may be regraded. 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, 723-1066 voice, 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:

≥95%	A+	≥70%	B-	≥45%	D
≥90%	A	≥65%	C+	≥40%	D-
≥85%	A-	≥60%	C	<40%	NP
≥80%	B+	≥55%	C-		
≥75%	B	≥50%	D+		