Chemistry 130 Syllabus
Fall 2006

Instructor: Dr. Hillary Hua, 231 Mudd (office hours T F 3:30-5pm)
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Teaching Assistants
Samuel Wilson, Head TA, s4wilson@stanford.edu

Dr. David Keller, Consultant Swain Library (M-F 9:00-1:30)
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Helps students on a volunteer basis with online database searching in Swain Library.

Prerequisite: Chemistry 36, or the equivalent from another university, is an absolute prerequisite for Chemistry 130 for safety reasons.

Lectures: Tuesdays and Thursdays, 9:00-10:15am, Braun Lecture Hall
Lecture notes will be uploaded to coursework prior to each lecture. They are the primary resource to use in studying for hour tests, because the hour tests will largely be based on lecture material. Lectures will be held twice per week early in the course, and then only once per week later in the course.

Labs: Saturday 9:00am-1:00pm, Mondays through Fridays, 1:00pm-5:00pm, September 30 through December 8 Mudd 2nd and 3rd floor.
Students must enter their lab day preferences using the following web site before 1:00 p.m. on Tuesday, September 27th:
http://cgi.stanford.edu/~dept-ctl/Chemlab/index.php
For your last lab period, during dead week (December 2-8), lab will be open only for cleanup. The final lab reports are due by 4:00 PM on your lab day during dead week. Missed labs will not be rescheduled and your TA will not stay overtime so come prepared to lab. A nonrefundable $75 laboratory fee will appear on your university bill if you have registered for this course, even if you drop the course early.

Texts:
Required

- Pavia, Lampman, and Kriz, *Introduction to Spectroscopy*, 3rd ed., Thomson Learning (2001).

Optional

- Shriner, Hermann, Morrill, Curtin, and Fuson, *The Systematic Identification of Organic Compounds*, 8th ed., Wiley (2004). This text explains procedures for Experiments 4-5.
- Mohrig, Hammond, Schatz, and Morrill, *Modern Projects and Experiments in Organic Chemistry: Miniscale and Standard Taper Microscale*, 2th ed., Freeman (2003). This text describes Experiments 1, 2 and 3.

- Mohrig, Hammond and Schatz, *Techniques in Organic Chemistry,* 2nd ed., Freeman (2006). This text accompanies the previous text (lab manual) and it includes many useful organic techniques.

On Reserve in Swain Library (in addition to the texts above)

- Pavia *Introduction to Organic Laboratory Techniques* (Chem 36 text) 1999
- Vollhardt *Organic Chemistry, 4th ed.* (Chem 33,35, and 131 text) 2003
- Zubrick *The Organic Chem Lab Survival Manual, 6th ed.* (Chem 36 text) 2004

In addition, the CRC *Handbook of Tables for Organic Compound Identification* is available on the Swain Library's web site:
http://www-sul.stanford.edu/depts/swain/services/courses/chem130/hoci/

Description of Experiments

Dates	Week	Experiment
Sat. 9/30 M-F 10/2-6	1 2	Diels-Alder reaction. It is based off of Experiment 19 in the Mohrig text.
Sat. 10/7, 10/14 M-F 10/9-13, 10/16-20	2, 3 3, 4	Reduction Reaction. This experiment involves a pair of reduction reactions on the same compound and determination of the product for each reaction. It is based on Experiment 24 in the Mohrig text.
Sat. 10/21 M-F 10/23-27	4 5	Wittig Reaction. It is based on Experiment 25 in the Mohrig text.
Sat. 10/28, 11/4 M-F 10/30-11/3, 11/6-10	5, 6 6, 7	Identification of an unknown compound. You will be provided with an unknown compound and you'll determine the structure of your compound.
Sat. 11/11, 11/18, 12/2 M-F 11/13-12/8	7, 8, 10 8, 10, 11	Identification of Two Unknown Compounds (a carboxylic acid and an alcohol) and Esterification Using the Two Unknowns.

Lab Write-ups

You are required to both keep an up to date and accurate lab notebook as well as submit formal lab write-ups for each lab.

All lab reports are to be deposited in the locked box near 233 Mudd by 4:00 p.m. a week after the day the experiment was performed, except for the Experiment 5 report, which is to be handed to the TA at the end of the final lab period. Grades for reports will be multiplied by $(0.9)^N$, where N is the number of days that the reports are late. A report that doesn't make it into the box before the TA picks up the day's reports is a day late, even if it is only a minute late.

Grading

60% written lab reports
20% two, hour tests (10% each)
10% pre-lab and notebook
10% lab performance

Written reports will be graded by all TAs simultaneously so that the same individual will grade one specific portion of every lab report. In this manner, all discrepancies between TAs will be eliminated and there will be no need to do so mathematically. The same procedure will be used to grade the hour tests.

Your TA will assign you a lab performance grade each day out of 10 points as you perform your experiments. You should feel free to interact and ask questions of both the students around you and of your TA. Lab coats can be purchased if the student desires to protect their clothes from chemical spills and possible contamination. Good lab performance includes, among other things: good safety practice, orderliness, efficiency, helping and cooperating with other students, appropriate lab attire, initiative, and appropriate use of instrumentation. Bad lab performance includes, among other things: unsafe practices, improper waste disposal, improper lab attire, conflict with other students, tardiness, messiness, excessively slow pace, failure to appear for any session including the final lab period during Dead Week, mistreatment of equipment, and concealing injury or equipment damage. The final performance scores will be normalized for TAs.

Regrade Policy

Students who believe that a lab report or an hour test has been graded incorrectly may turn the work back in to the Head TA for reconsideration. Lab reports will be ready for student pick-up Monday morning and are due by 4:00 that Friday for regrading. Exam regarding requests are due one week after they have been made available. Exam and Lab regarding requests must be done in pen for it to be considered. In order to submit a regarding request, the student must write out a brief request, staple it to the lab report or exam in question, and turn it back into the wooden lock box. The entire work, not just the disputed portion, will be regraded. The score may therefore be lowered, raised, or remain the same. Therefore students are encouraged to approach their TAs before submitting the regarding request. Your TA cannot guarantee the return of loss of points. That decision falls with the HTA. If a student has submitted work for a regrading, and the regrading has not resulted in a higher score, all subsequent regrading requests from that student for the rest of the quarter that also do not result in a higher score will be penalized 5% (score multiplied by 0.95). Remember, regrades are for you to reclaim points that were taken unjustly when compared to the average. Not just because you don't agree with the point loss. Do Not Abuse Regrade Requests!

Getting Help

TAs will be available in Swain Library from 1:30-4:30 p.m. and also from 7:00-9:00 p.m. throughout the quarter. In addition, Dr. Keller can often be found in the computer room in the library to help specifically with online database searching.

Tentative Lecture Schedule

Date	Topic
Tuesday, Sept-26	Introduction; Safety; Experiments 1-3
Thursday, Sept-28	IR
Tuesday, Oct 3	IR; Functional Group Tests
Thursday, Oct 5	Functional Group Tests ; ^{13}C NMR
Tuesday, Oct 10	^{13}C NMR
Thursday, Oct 12	^{1}H NMR
Tuesday, Oct 17	Hour test #1
Thursday, Oct 19	^{1}H NMR
Tuesday, Oct. 24	Use Online Database Search in Swain Library to Find Unknowns
Tuesday, Oct. 31	^{1}H NMR; Combined IR/NMR Structure Problems
Thursday, Nov 7	Mass spectrometry
Tuesday, Nov 14	Special Topic
Tuesday, Nov 28	Combined IR/NMR/mass spec structure problems
Tuesday, Dec 5	Hour test #2