

Welcome to Chemistry 3AL

The goal of this laboratory course is to introduce you to the theory and techniques of experimental organic chemistry. Furthermore, through a combination of lecture and laboratory you will be exposed to a variety of processes and practices that are actually relevant to many aspects of your everyday life. An equally important goal of this course is to teach you how to navigate through the laboratory in a safe and efficient manner.

Awareness of the health and safety aspects of laboratory science is fundamental to anyone interested in pursuing a career in the sciences.

Lectures

Wednesday 5-6 PM in 1 Pimentel and Friday 12-1 PM in 100 Lewis. Friday lectures are a repeat of Wednesday lectures.

Week	Date	Title
1	9/3 and 9/5	Intermolecular forces #1
2	9/10 and 9/12	Intermolecular forces #2
3	9/17 and 9/19	Melting Points and Phase Diagrams
4	9/24 and 9/26	Boiling Points and Dipole Moments
5	10/1 and 10/3	Recrystallization
6	10/8 and 10/10	Chromatography #1
7	10/15 and 10/15	Chromatography #2
8	10/22 and 10/24	NO LECTURES
9	10/29 and 11/31	NMR #1
10	11/5 and 11/7	NMR #2
11	11/12 and 11/14	NMR #3
12	11/19 and 11/21	NO LECTURES
13	11/26 and 11/28	THANKSGIVING
14	12/4 and 12/6	NO LECTURES

At the beginning of the semester, the purpose of the laboratory lectures is to introduce you to the principles behind the experiments you will be performing in the laboratory.

The lectures will NOT serve as a “walk-through” of the actual experiment, but rather will focus on the theory and practical aspects of what you will be discovering in the lab. In the later part of the semester, after you have established a foundation of techniques used in the organic chemistry laboratory, the lectures will turn to topics related to structure determination. Parts of these lectures will not be related to any experiments being performed this semester, but will serve as a foundation to build upon in the Chemistry 3B laboratory.

Laboratory

Laboratories are 4 hours long. You should plan on being in lab for this period of time.

Most experiments in Chemistry 3A are designed to have you investigate a subject(s) and then solve a problem or reach a conclusion. Many of the experiments require that you work in groups of 2-4 students so that several pieces of data can be collected and then analyzed. Group work requires cooperation and sometimes, patience. It is important to check each other's data and discuss with each other whether or not that data is consistent with what was expected. If not, then the experiment

should be redone. Individuals will be graded on a groups data as well as their own. Therefore, it is important to evaluate everyone's data as though it were your own.

Please note that no person(s) in a group is to rush another group member(s) in order to finish early. If it is determined that this is occurring, the teaching assistant will excuse the person(s) involved from lab for that day. They will also receive 0 points for that lab AND this score cannot be used as the dropped score.

Office Hours

Prof. Toste: To Be Announced

Teaching Assistants: To Be Announced

Course Website

The course website is <http://bspace.berkeley.edu>. If you are enrolled in the course, you will have access to this site. Announcements, along with many other items will be posted on this website. It is recommended that you check this regularly to see if there are any relevant announcements that you might have missed in class.

Required Texts

"Understanding the Principles of Organic Chemistry. A Laboratory Experience."

Steven F. Pedersen and Arlyn M. Myers. (ISBN-13: 978-0495829935). Organic Chemistry Laboratory Notebook. Steven F. Pedersen, Jesse H. Pedersen.

Lab Attendance and In-Lab Observations

There are eight graded labs, one in-lab worksheet and one "take-home" NMR spectroscopy worksheet. Each lab/worksheet is worth 10 points. **Your lowest score will be dropped.*** See the handout on lab grading to determine what is necessary for the successful completion of a lab. *It is your responsibility to read the information in this handout.* As you will see, there are important consequences associated with not attending lab and/or not turning in the appropriate data/analyses. Course ethics are also highlighted in this document.

*Note: if you miss lab for any reason (including University sanctioned events, illness etc.), the first of these will be used as a dropped lab.

Lab Report Questions

This semester you are NOT responsible for handing in the answers to the lab report questions posed at the end of each experiment. You can, however, turn in answers to these questions on the dates listed in the laboratory schedule and they will be reviewed and corrected by your teaching assistant. Please note that this is strictly voluntary and NO record of whether or not you turned in these questions will be kept. The only time this offer of correcting your answers to these questions is valid is on the date that is listed in the laboratory schedule. Teaching assistants will not supply the answers to these questions by e-mail or any other electronic format.

In Class Lab Reports

There are NO formal lab discussions due as part of the lab report. Instead, in class lab report will be required twice during the semester (**weeks of 10/14-10/20 and 11/17-11/21**). This entails writing a discussion and conclusion and answering questions from one of the eight experiments. During that lab period you will be offered the choice of writing a lab report on one of two experiments, from this list of experiments that you have already performed. The two experiments will be announced during the actual lab period. The lab report will consist of writing a discussion that is similar to, but not necessarily exactly the same as the discussion "bullets" found at the end of each experiment. You

will also write a conclusion. You will also be asked to answer lab report questions similar to, but not necessarily exactly the same as the questions found at the end of each experiment.

During these lab periods you will be allowed to use your lab textbook and you will be given a copy of your in-lab observations for the experiment you choose. No calculators will be allowed and you cannot use your lab notebook.

ATTENDANCE AT THIS LAB PERIOD IS MANDATORY. THE IN CLASS LAB REPORT CANNOT BE USED AS YOUR "DROPPED" SCORE.

Further details about the in-lab lab report will be discussed in lecture later in the semester.

NMR Spectroscopy Worksheet

There will be a "take-home" NMR spectroscopy worksheet that will be available online starting on November 11th. This worksheet will be due at the beginning of your In Class Lab Report on November 17-21th.

Lab Exam

On Wednesday, December 3, 2014 there will be a one-hour lab exam that begins at 7 PM. The exam will focus on the *material covered in the lab lectures as well as the theory behind all techniques you have learned about in 3AL*. This exam MUST be taken AND a score of ≥ 10 points must be obtained in order to pass the class. That is, if you score less than 10 points on the exam, you will receive a grade of Incomplete in the class (assuming your lab scores are of passing quality) no matter how well you scored on your in-lab observations and your in-lab lab report. To remove the Incomplete grade, you will need to take the 3AL lab exam offered in the spring of 2013 or the summer of 2013. If you do not pass the exam (≥ 10 points) the second time, you will receive a failing grade in the course.

Grades

The point total for this course is 150. These are broken down as follows:

- 80 points for lab attendance and in-lab observations and data (this takes into account one dropped lab score). The "take-home" NMR Spectroscopy worksheet is included in this.
- 40 points for two in-lab lab report
- 30 points for the laboratory exam

Grades at the end of the semester will be assigned as follows:

Grade	Includes	Points
A	A and A-	120-150
B	B+, B and B-	105-119
C	C+, C and C-	90-104
D	D	75-89
F	F	0-74