

Organic Chemistry Laboratory
Chem 12B, section 61, CRN 42676
Spring 2015

Instructor: Dr. Yue Liu (liyue@fhda.edu)
Office hours: T, 6:30 -7:30 PM in SC1224

Session	Room	Days	Start Time	End Time
Lab lecture	SC2210	T/Th	2:30 PM	3:20 PM
Lab	SC2210	T/Th	3:30 PM	5:20 PM

Necessary Materials

1. *Experimental Organic Chemistry: A Miniscale and Microscale Approach*, 5th edition by John C. Gilbert and Stephen F. Martin (Brooks/Cole: 2011; ISBN 978-1-439-04914-3).
2. Safety goggles.
3. Examination gloves.
4. Lab notebook



Grading

Assignment	Point value	# of assignments	Total points
Pre-lab	5	9-1=8	40
Lab report	20	9-1=8	160
Lab exam	80	2	160
Total lab points			360

Safety policy

Spill – All spills must be immediately cleaned up to prevent harmful exposure, esp. in common areas including instrument room, the balance areas and the disposal area. Be sure to clean up any chemical residues in your fume hood area as well.

Waste disposal – All chemical waste must be disposed of in a chemically compatible container: acidic, basic or organic. Only use waste containers bearing my initials (YL) unless otherwise instructed. Do not fill the container above the marked fill line.

Glass waste – Glass should be disposed in glass recycling. Heavily chemically contaminated glassware should be disposed of in a chemically compatible waste bottle.

Sink areas – Please ensure that no solid debris is left in any of the sink. Check the drain strainers for waste before you leave.

Sand – Make sure you clean up any sand that is spilled in moving it.

Equipment – All equipment you use during the lab, such as hot plates or stands, must be returned to the appropriate location at the end of lab.

Lab Schedule

WEEK OF	TUESDAY	THURSDAY
APR 5	Check-in	L1: Oxidation of alcohols (Part A) (1) Page 542-544
APR 12	L1 (2)	L2: Reduction of 9-Fluorenone (1) Page 581-583
APR 19	L2 (2) Report 1 due	L3: Wittig reaction: synthesis of (Z)- AND (E)- stilbenes (Part A) (1) Page 603-604, 606-607
APR 26	L3 (2) Report 2 due	L4 (1): Preparation of Grignard reagents Page 643-645
MAY 3	L4 (2): Grignard reaction (Part A) Page 652-653 Report 3 due	L4 (3)
MAY 10	L5: Kinetic & thermodynamic control of a reaction (Part A-C, E) (1) Page 450-453	L5 (2) Lab exam 1 (Lab 1-4) Report 4 due
MAY 17	L5 (3)	L6: Diels-Alder reaction (Part A) (1) Page 426
MAY 24	L6 (2) Report 5 due	L7: Friedel-Crafts acylation of m-xylene with phthalic anhydride (1) Page 505-507
MAY 31	L7 (2) Report 6 due	L8: Nitration of bromobenzene (Part A) (1) Page 515-516
JUN 7	L8 (2) Report 7 due	L9: Relative rates of electrophilic aromatic bromination (Part A) (1) Page 525-527
JUN 14	L9 (2) Report 8 due	Lab exam 2 (Lab 5-9) Check-out Report 9 due
JUN 21		

Pre-lab

Before each new lab, you are required to prepare a pre-lab, which is to be checked at the beginning the first lab meeting of that experiment. The pre-lab should be prepared directly in your lab notebook on the right hand pages, including at least the following three parts:

1. Title of the experiment
2. Procedures
Draw a vertical line through the middle of the page. To the left side of the line, you should rewrite the entire procedure in steps in your own words with enough detail that you would be able to perform the lab according to your procedure section. You can record observations during the lab to the right side of the line at the corresponding step in the procedure.
3. Chemical Hazards
List any important safety information about the chemical reagents, starting material, or solvents that are given in the procedure.
4. Chemical disposal
List each chemical/mixture generated during the experiment and indicate the appropriate waste container for each: acidic, basic or organic. If you are unsure, leave a space so that you can fill in the information during the lab lecture.

Lab notebook

The purpose of keeping a lab notebook is preserving a legal (and therefore dated) record of your activities. Certain scientific discipline, government work, research work for which patents may be needed, etc. will often have very strict guidelines for the manner in which date is recorded.

1. Produce a table of contents on the first page.
2. Start numbering the pages from the second page. Number the second page as page number one (number up to page number 50 when you come to the next lab meeting).
3. Prepare a Pre-lab in the notebook before you come to the lab.
4. Do not record data in the lab book during the experiment, but record everything in the lab notebook.
 - a. All data must have proper units and correct number of significant figures.
 - b. Observations should be recorded, such as changes in color, formation of precipitates, evolution of gases, changes in states (solid, liquid, gas), crystalline structure, etc.
 - c. One sample calculation for each type should be shown.

- d. All entries should be legible and readable. If the notebook cannot be read or understood by a third party, it is of little value. If I cannot understand what you wrote, you will not receive pre-lab points.
5. Sign and date when you finish the day's experiment, and obtain my signature before you leave.
6. All graphs should be properly titled and labeled. Printed graphs should be pasted in the notebook below the data table.
7. Use the left hand pages for notes, rough calculations, or other information.
8. If you make a mistake, do not "white-out", but cross out with a straight line and enter the correct number.
9. Never remove a page from the lab book. All pages are numbered, remember? If you remove a page to hide certain information, it will be found out.

Lab reports

Hand written lab reports are to be submitted at the beginning of the lab meetings on the indicated days on the schedule, including the five parts shown below.

1. Title of the experiment
2. Reaction scheme
3. Reaction yield, when applicable. Please show calculation steps.
4. IR spectrum, when applicable
5. Discussions commenting on the reaction yield and/or the product purity according to the IR spectrum and explain possible reasons that lead to these results.

How do I grade lab reports?

If you finished the lab in its entirety, a complete lab report receives 12 points. Based on the quality of your experimental results and your depth of understanding as shown in the discussion section of your lab report, you get anywhere between 12 and 20 points. Any violation of the lab safety policy will result in deduction of points on the lab report.