

**CHM122L – Introduction to Organic Chemistry Lab
Spring 2005**

Instructor: Dr. Jian Dai **E-mail:** daij@wfu.edu **Office Hours:** By appointment
Office: 4B Salem Hall (758-5513)
Lab Room: Salem 10 (prelab lecture) Friday 2-6PM
Web Page: <http://www.wfu.edu/~kingag/122L>

Required Texts: Williamson, Macroscale and Microscale Organic Experiments,
4th Ed, Houghton Mifflin, 2003.

Laboratory Notebook with duplicate, carbonless pages

Grading Scheme:

Lab Quiz 1	March 18	150 points
Lab Quiz 2	April 22	150 points
Experiments	(see table below)	1000 points

Experiment(s)	Due Date	Points
Conformational Analysis	Jan. 28	75 points
Distillation	Feb. 4	100 points
Components of a Painkiller, Crystallization, Melting Point	Feb. 25	200 points
Chromatography	March 4	100 points
IR, NMR	March 4 (in class)	100 points
Pinacolone Rearrangement (including Spartan)	April 1	125 points
Alkenes from Alcohols (GC)	April 8	100 points
Diels-Alder	April 15	100 points
Friedel-Crafts	April 22	100 points

Late lab reports are assessed a penalty of 20%/day. No excuses will be accepted. Don't forget to turn them in before leaving lab! Letter grades will be assigned according to a scale generated at the end of the semester. Experiment grades will be adjusted to account for differences between T.A. section.

Lab Quizzes are designed to test whether or not you understand the concepts and techniques taught and used in the lab. For instance, how would a particular experimental error, such as adding half of the desired amount of a starting material or not drying your glassware, affect the results of an experiment? Can you calculate percent yields for reactions? Where (specifically) is safety equipment located? Can you predict products for reactions that are very similar to reactions carried out in the lab? If you truly understand the experiments, you should not have difficulty with the quizzes. Lab quizzes may not be made up, even for excused absences.

Attendance at pre-lab lecture is mandatory! Safety issues will be discussed in the pre-lab lecture. You cannot participate in the lab if you do not attend the pre-lab. If you know you will miss a lab, inform your instructor and your teaching assistant. You will not be allowed to make up any experiments. For excused absences from lab, your lab grade will be based on fewer points. You will still be responsible for the material you missed on lab quizzes.

Safety: Material Safety Data Sheets and handouts received during check in can be found online at <http://www.wfu.edu/~kingag/122L>. Students should familiarize themselves with the basic safety practices on the inside cover of the textbook.

- Never work in the laboratory alone or perform unauthorized experiments.
- Learn the location of the nearest fire extinguisher, eye-wash, safety shower, and exits.
- **Wear safety glasses at all times in the laboratory.** (5 pt penalty if you are caught without them.)
- Do not wear sandals or shorts in the laboratory.
- Handle all chemicals with care, avoid contact with skin and clothing, avoid inhalation.
- Do not eat, drink, or smoke in lab.
- Dispose of chemical waste properly.
- Report accidents immediately to the TA or instructor.
- Keep book bags and personal items off the floor of the lab room.

Laboratory Notebooks:

- Each student is required to have a laboratory notebook with duplicate pages. The duplicate pages of the notebook should be torn from the notebook and given to the TA once a write-up for an experiment is completely finished. Typically, the yellow sheets will be due to the TA during the lab period following the day that the experiment was performed. See the chart under Lab Reports for due dates.
- Notebook entries must be neat, organized, clearly written in **ink**, and legible to be considered for grading. Unintelligible scrawl will not be graded.
- The experimental procedure should be written so that another person could use your notebook to repeat your experiment.
- See pages 16-24 in your lab text for a notebook outline and a detailed example.
 - Name, Class, Teaching Assistant, Instructor (inside front cover)
 - Table of Contents: Leave two blank pages at the front of the book for a TOC if one is not included by the notebook publisher. Keep a running (and up-to-date) TOC that includes the experiment title and notebook page number. Your teaching assistant will occasionally check TOC entries.

For each experiment:

Pre-Lab

1. Date Experiment Is Performed
2. Experiment Title
3. Purpose or Objective (one or two sentences should suffice)
(Include steps 4-6 for experiments in which chemical reactions are carried out.)
4. Balanced Equations for Reactions Performed (Including Structures), if applicable
5. Amounts of All Reagents used including amount in grams or mLs, molar mass, and number of moles. Use a table format.
6. Calculation of Theoretical Yield
7. Experimental Procedure: Read laboratory procedure before lab and prepare an abbreviated procedure (**see textbook page 24**). Avoid the use of the first person. Leave room in your notebook to record actual experimental observations or changes in planned procedure. **You should be able to do the experiment from your notebook and without the lab text. If you do not prepare for lab, you will experience more difficulties. You are still required to exit the lab at the end of your 4 hour period.** For any Spartan computer labs, you should refer to the handouts rather than rewriting the entire procedure in your notebook. You may bring printouts from web material on Basic Lab Skills and Special Equipment information which can be found on the course website.

8. Describe any particular safety hazards and the planned disposal of chemical wastes.

During Lab

Record all procedures and observations in ink in your notebook. It is impossible to write this section before the lab and difficult to completely write it afterwards. Indicate any experimental observations in this section (color change, gas evolution, heat produced, increase or decrease in reagents, etc.)

After Lab

1. Calculate Percent Yield of the desired product, if applicable
2. Organize Physical Data for desired product (mp, bp, TLC, GC retention time, ...)
3. Discussion/Conclusions: Comment briefly on experiment. Were the objectives of the experiment met? Comments should be made on errors and/or suggested improvements.
4. Answer any assigned post-lab questions. (typed & submitted separately)

The teaching assistant will use 10% of each report grade to distinguish the most prepared, safety conscious students from those who are less prepared for, or careless in, lab. To earn high performance points, you should read the experiment before lab, complete the pre-lab notebook entries prior to lab, wear appropriate lab attire (including safety glasses) at all times, and keep the lab clean. You should work efficiently in lab and ask intelligent questions of your TA when necessary. You will automatically receive deductions for safety violations and bad lab techniques, such as leaving caps off bottles, writing on scrap paper, possibly contaminating reagent bottles, or improper waste disposal.