

**Introduction to Organic Chemistry Lab.**  
**CHM122L-Syllabus**  
**Spring 2007**

**Instructor:** Dr. Latifa Chahoua

**Office Hours:** By appointment

**E-mail:** [chahoual@wfu.edu](mailto:chahoual@wfu.edu)

**Office:** 9A Salem Hall (4351)

**Lab Room:** Salem 10 (prelab lecture) and Room 102, 106 Friday 2-6PM

**Handouts and safety information, including Material Safety Data Sheets, can be found on the course web page at <http://www.wfu.edu/~welderco/122L/>.**

**Required Texts:** Zubrick, The Organic Chem Lab Survival Manual, A Student's Guide to Techniques, 6<sup>th</sup> ed., 2004.  
Laboratory Notebook with duplicate, carbonless pages

**Grading Scheme:**

Lab exam 1	March 2	10%
Lab exam 2	April 27	15%
Experiments	(see table below)	75%

<b>Experiment(s)</b>	<b>Report Due Date</b>	<b>Points</b>
Conformational Analysis	January 26	100 points
Moonshine	February 9	100 points
Pigments in Paprika	February 16	100 points
IR	February 16	50 points
NMR	February 16	50 points
Components of a Painkiller, Crystallization, Melting Point	March 23	250 points
Mass Spectrometry	March 23	50 points
Benzopinacol and Pinacolone Rearrangement (including Spartan)	April 13	100 points
Alkenes from Alcohols (GC)	April 20	100 points
Diels-Alder	April 27	100 points
Unknown	April 27	100 points

You will have to return eleven lab reports this semester. For each report, turn in the duplicate pages from your notebook, typed answers to questions, and a typed discussion. Also include Excel graphs and data points as necessary. If you were given or obtain spectra, include the spectra in your final report. Include electron-pushing mechanisms when instructed to do so. Reports are due at the beginning of a class period in the due dates reported in the chart.

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, late to, 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,

act professionally in the lab, and help keep the lab and your lab drawers 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.

For experiments in which products are submitted for grading, a portion of the report grade will reflect the product. Be aware that 20% (50 points) of your painkiller report grade will be directly related to how well you separate and isolate the three components of the painkiller. Other product grades will have less impact on the overall report grade.

**Lab Exams** 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 exams. Lab exams 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 exams.

**Safety:** Read all Material Safety Data Sheets and handouts received during check in. Students should familiarize themselves with the basic safety practices:

- 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. You will be asked to go home.
- 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.

**You will have to take an online Safety Quiz early in the semester. Answers to questions on this quiz can be found in the safety video, in the lab text, on safety posters in the first floor halls, or in the lab rooms.**

**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 Zubrick Ch. 2 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 Zubrick Ch. 2). 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 <http://www.wfu.edu/~welderco/122L/>
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.