Overview

The experiments in this course are examples of advanced problems which make use of organic, inorganic, medicinal and materials chemistry in various ways. The aim of each experiment is for you to provide a solution to a specific problem posed in the experiment. The experiments are provided in the form representative of what you would find in the chemical literature.

CHEM 2380 is a prerequisite and CHEM 3111 is a prerequisite with concurrency for CHEM 3380. The introduction of each experiment in CHEM 3380 includes discussions of the theory (structure, reactivity, mechanism). Although you might not have covered the mechanism of a reaction in CHEM 3311 prior to performing a synthesis in the laboratory, you will cover it in detail by the end of the semester. The laboratory procedures described in each experiment are augmented by the Techniques Manual (TM). The Techniques Manual is The Organic Chem Lab Survival Manual by J.W. Zubrick (6th edition, John Wiley and Sons, 2004). The weekly lectures will provide vital information about each experiment. In addition, prelaboratory demonstrations are given by the Laboratory Instructors. Other sources of useful information appear on the homepage.

The procedures for the experiments are provided in varying detail. Some of the procedures are basically recipes for a novice, while others draw on your expertise gained in CHEM 2380 with only rudimentary instructions.

Laboratory Techniques

The experiments presume knowledge of the following techniques: distillation, extraction, recrystallization and determination of melting points, thin-layer, column and gas chromatography and nuclear magnetic resonance and infrared spectroscopies.

The quantities of each reagent are given in the procedure in moles or molar excesses; you will need to convert these to masses and/or volumes to measure out compounds in the laboratory.

On-line Resources

The URL for CHEM 3380 is:

http://web.chemistry.gatech.edu/~barefield/3380/3380.html

Each experiment appears as a PDF file which can be printed and contains links to other information.
Prelab Exercises, Reports and Post-lab Reports

A prelab exercise is to be completed before each laboratory period. Completion of these exercises is important in setting the scene to solve the chemical problem in each experiment.

The first part of each pre-laboratory exercise is to read the entire experiment package and to write a simple, but detailed, list of instructions in your notebook to follow in the laboratory. **You will not be allowed to take the experiment package into the laboratory.** Therefore, the procedure that you write in the notebook should be detailed enough to complete the experiment in the laboratory. These instructions should not be verbatim copies of the experiment package, but a detailed outline of the procedure in terms that you (or a fellow student) can follow with emphasis on new, important or critical steps.

Reports are due one week after you have completed an experiment. Each report takes the form of a publication found in the chemical literature.

Detailed instructions for the preparation of reports, and grading schemes, are provided on the web page.

Students are required to adhere to the GT Academic Honor Code: [www.honor.gatech.edu](http://www.honor.gatech.edu).

*Use of any previous semester lab reports and course-work, is prohibited in this course. Using these materials will be considered a direct violation of academic policy and will be dealt with according to the GT Academic Honor Code.*

*Plagiarizing is defined by Webster’s as “to steal and pass off (the ideas or words of another) as one's own.. ” If caught plagiarizing, you will be dealt with according to the GT Academic Honor Code.*

*For any questions involving these or any other Academic Honor Code issues, please consult with the course instructors, laboratory coordinator or teaching assistants, or www.honor.gatech.edu.”*

In Summary

1. Read the *entire* laboratory package and review procedures in the *Techniques Manual*.
2. Attend the lectures.
3. Complete the prelab assignment. This will help you focus on the laboratory procedure.
4. Write a *thorough* set of instructions in you laboratory notebook prior to the laboratory period, consulting the model lab pages on the web.
5. Pay attention to prelaboratory demonstrations.
6. Write reports following the recommendations provided, with requested attachments.
7. Complete the questions.