## Course Objectives

The experiments performed in this course are designed to give you further hands-on experience in the manipulation and study of organic and inorganic compounds. The experiments have been selected to illustrate reactions that you have studied, or will study, in organic and inorganic courses, and to broaden your knowledge of experimental techniques for investigation and characterization of more complex compounds. The experiments are provided in forms reminiscent of what you would find in the scientific literature. CHEM 2380 is a pre-requisite for CHEM 3380. You will further develop your scientific writing skills through laboratory reports for each experiment, and you will develop your data and spectroscopic analysis skills by completing worksheets and problem sets between experiment reports. The weekly lectures will provide an introduction of each experiment and will include discussions of the theory, structures, reactivity, and mechanisms of the reactions being performed, as well as other vital information. As such, attendance at these lectures is mandatory. The laboratory procedures are provided in varying detail, and you will often be required to complete calculations and pre-lab exercises prior to coming to lab.

## Course Components

| | Section | Day | Time | Building | Room |
|---|---|---|---|---|---|
| Lecture[1] | A | M | 14:05-14:55 | Instructional Center | 107 |
| Laboratory | A1 | TR | 12:05-14:55 | Boggs | 2-25 |
| | A2 | WF | 12:05-14:55 | Boggs | 2-25 |
| Recitation[2] | A1 | TR | 14:55-15:55 | Boggs | 2-25 |
| | A2 | WF | 14:55-15:55 | Boggs | 2-25 |

[1]Attendance at the first lecture session is mandatory, no exceptions.
[2]The recitation time slot is reserved in the event that you need extra time to complete laboratory experimentation and/or data collection.

## Course Instructors & Office Hours

Instructor: Dr. Amanda Stephens
Office: Boggs 2-90D
Email: amanda.stephens@chemistry.gatech.edu

Office Hours:
Wednesday 10:00-11:00
Friday 9:00-10:00

Instructor: Dr. E. Kent Barefield
Office: ES&T, Rm L1242
Email: kent.barefield@chemistry.gatech.edu

Office Hours:
Tuesday 10:00-11:30
Thursday 10:00-11:30

Co-Instructor: Dr. Robert Braga
Office: Boggs 2-90H
Email: robert.braga@chemistry.gatech.edu

Office Hours:
by appointment

If you are having trouble with data interpretation or writing reports, please see an instructor or a teaching assistant during posted office hours. If you are having trouble with a technique, be sure to get advice during the lab period. If you are unable to come by during office hours due to scheduling conflicts, arrange an appointment for another time via email. TA office hours and contact info can be found on T-Square.

**Required Course Materials**

- Text: Zubrick, J. W. *The Organic Chem Lab Survival Manual: A Student's Guide to Techniques*, **2012**, 9th Ed. ISBN-13: 9781118083390
- Lab Coat: 100% cotton laboratory coat
- Goggles or Safety Glasses with Splash Guards
- Lab Notebook: carbonless copy lab notebook
- BuzzCard Funds: Students must maintain a minimum balance of $30 on his/her BuzzCard account in case of breakage (see breakage policy).
- Combination Lock
- Software: ChemDraw, Mnova NMR Lite (v. 5.2.5), and Mestrec23; GA Tech has a site license for this software at no cost to the student. See T-Square for information on how to download this software.

**Grading Policies**

Grades are calculated on the basis of **1050 pts**, distributed as follows:

- nine full lab reports (100 pts each) = 900 pts
- one literature lab (100 pts) = 100 pts
- one glassblowing lab (50 pts) = 50 pts

Grades will be assigned as follows:

- 945 pts (90%) guarantees an A
- 840 pts (80%) guarantees a B
- 735 pts (70%) guarantees a C
- 630 pts (60%) guarantees a D

**Pre-Lab Exercises & Laboratory Reports**

A pre-lab exercise is to be completed before each laboratory period. The exercises include, but are not limited to, reading the entire experimental package, recording a detailed, non-verbatim, list of instructions in your notebook, compiling a table of reagents, and completing calculations of any reagent amounts. The balanced overall reaction and theoretical yield should be included. Some will include additional worksheets.

Grading will be according to the rubric available for each experiment. The rubric should be printed out by the student and attached to the front of the laboratory report. Laboratory reports are due during lectures according to the schedule listed below. Lab reports should be prepared using the Journal of

the American Chemical Society format, and ChemDraw structures should be prepared according to the JACS or Wiley format. Full lab reports include a title, abstract, introduction, experimental, results & discussion, attachments, and answers to post-lab questions. Laboratory reports are to represent the work of each individual, except where explicitly stated. See notes on the Academic Honor Code, below.

**Late Laboratory Reports:** Laboratory reports that are submitted late will receive a 20% deduction, and the student will have one additional week to complete and submit the assignment. An additional 20 pts will be deducted for each additional week that the assignment is late. Laboratory reports must be submitted within five weeks of the due date in order to receive credit. Laboratory reports that are not submitted within five weeks will be awarded zero points. No late laboratory reports will be accepted after Friday, December 4, 2015 at 5:00p. There will be no exceptions to this deadline.

**Regrade requests** should be submitted in writing to the instructor no later than one week following the return of the graded assignment to the class. A written case should be made for why the student believes that deducted credit should be returned for an answer or detail. The instructor reserves the right to regrade the entire assignment.

## Assignment Due Dates

See the course schedule for experiment dates. Lab reports are due during lecture as listed below.

| Assignment | Section A1 | Section A2 |
|---|---|---|
| Glassblowing Project | Monday, Nov 30, 2015 | Monday, Nov 30, 2015 |
| Literature Lab | Tuesday, Sept 8, 2015 | Wednesday, Sept 9, 2015 |
| Experiment 3 Lab Report | Monday, Sept 14, 2015 | Monday, Sept 14, 2015 |
| Experiment 4 Lab Report | Monday, Sept 21, 2015 | Monday, Sept 21, 2015 |
| Experiment 5 Lab Report | Monday, Sept 28, 2015 | Monday, Sept 28, 2015 |
| Experiment 6 Lab Report | Monday, Oct 19, 2015 | Monday, Oct 19, 2015 |
| Experiment 7 Lab Report | Monday, Oct 26, 2015 | Monday, Oct 26, 2015 |
| Experiment 8 Lab Report | Monday, Nov 9, 2015 | Monday, Nov 9, 2015 |
| Experiment 9 Lab Report | Monday, Nov 16, 2015 | Monday, Nov 16, 2015 |
| Experiment 10 Lab Report | Monday, Nov 23, 2015 | Monday, Nov 23, 2015 |
| Experiment 11 Lab Report | Wednesday, Dec 2, 2015 | Wednesday, Dec 2, 2015 |

## Attendance Policy

Attendance at all assigned laboratories is mandatory. In case of illness or other excused absence, contact the instructor prior to missing laboratory. It is the responsibility of the student to ensure that proper documentation is submitted to the instructor in a timely manner in order to arrange for a make-up. Make-up sessions must be arranged one week prior to a scheduled absence or within three days following an unscheduled absence. The availability of make-up sessions is dependent on course enrollment and the experiment that needs to be made-up. A laboratory session for which a student arrives unprepared and is refused admittance does not constitute an excused absence.

**Laboratory Admittance**

Students should arrive at the laboratory having already read the entire experiment package and having written in their notebooks detailed instructions for performing the day's experiment, including the mass or volume of reagents to be used during the laboratory period and any safety hazards for materials used during the experiment. The experimental procedure should not be a verbatim copy of what is presented in the experiment package.

In addition, students must be wearing the proper attire to gain admittance to the lab, as follows:

- Shoes must cover the entire foot. No flip flops, ballet flats, or open-toed shoes are permitted.
- Students must wear pants that cover to the ankle. Synthetic materials and skin-tight pants are not permitted.
- Safety glasses/goggles must be worn at all times during the laboratory period. Students must be wearing safety glasses/goggles when they enter the lab.
- Laboratory coats must be worn at all times while inside the lab and should cover to the knees.
- Long hair should be tied back.

Students arriving more than 15 minutes late for lab, including time for which they are sent away due to inappropriate attire, will not be permitted to enter the lab or make-up the experiment.

**Breakage Policy**

Each student is required to maintain a minimum $30.00 balance in their BuzzCard account in order to replace broken/lost equipment. In the event that you need to make a purchase, present your BuzzCard and a completed Laboratory Equipment Replacement form to the Laboratory Coordinator during the laboratory period. The amount will be deducted from your account, and you will be supplied with replacement equipment.

During the first week of labs, you will check in to your assigned desk. Check the equipment list against the contents of your lab desk. Be sure to check for any cracks or broken equipment. If you are unsure what a piece of equipment is, consult your TA. Once you are sure that you have a complete set of equipment, sign the checkout sheet and return it to your TA. From this point forward, you are responsible for maintaining the equipment in your desk until you check out.

During the last week of labs, you will check out of your assigned desk in consultation with your TA. Any missing or broken equipment is your responsibility to replace. Glassware should be returned clean and free of chemical residue. If you drop the course, you must check out within two weeks of dropping. Failure to check out will result in "no grade" being reported for the course, and a hold will be placed on your registration.

**Honor Code**

Students are required to sign and date all graded materials in accordance with the Georgia Institute of Technology Academic Honor Code (www.honor.gatech.edu). By turning in an assignment for a grade, each student represents that he/she is the sole author of the work presented and that no act of plagiarism or academic misconduct has been performed during the preparation of the work.

Students are permitted to work together with other students who are currently taking the course and are encouraged to discuss their reasoning and thought processes in order to foster a positive learning environment, but the generation of answers, phrases, lab reports, numbers, figures, and structures must be the work of each individual student. Students are not permitted to use data or lab reports, in part or in whole, from prior semesters during the preparation of their reports, as this constitutes academic dishonesty. Submission of a lab report that has elements taken directly from someone else's work constitutes plagiarism and, therefore, academic dishonesty. Cases of academic dishonesty will be handled according to the GTAHC.

Structures and figures must be constructed using ChemDraw, for which GA Tech has a site license and which is no cost to the student. Copying and pasting a figure from someone else's work, including the internet, without a proper citation is considered plagiarism. Students will receive no credit for obviously copied structures and figures that do not include a proper citation. If you have any questions or concerns about these or any other Academic Honor Code issues, please consult the instructor.

**Disabilities**

The Georgia Institute of Technology complies with the Americans with Disabilities Act (ADA). Any student who requires accommodations under the ADA must meet with the instructor at least one day prior to the student's first scheduled laboratory session to discuss an accommodation plan with the instructor. The student should arrange for a letter of documentation from the Office of Disability Services to be sent to the instructor to support the request for accommodation.

**Discrimination and Harassment**

In accordance with the documented policies of the Georgia Institute of Technology, discrimination and harassment on the basis of race, color, sex, gender, national origin, religion, disability, sexual orientation, veteran status, or anything else is strictly prohibited.

**Notice**

The syllabus and course schedule are subject to change. Additional instructions for assignments will be included in each laboratory package, and additional information regarding laboratory policies, the course calendar, notebooks, laboratory reports, desk assignments, equipment, safety, and relevant software can be found on T-Square.