Course Objectives

The experiments performed in this course are examples are real-life problems which make use of organic and bioorganic 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 forms reminiscent of what you would find in the scientific literature. CHEM 2380 is a pre-requisite for CHEM 3371. 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. The laboratory procedures are provided in varying detail, and you will often be required to complete calculations prior to coming to lab.

Course Components

	Section	Day	Time	Building	Room
Lecture[1]	A	M	13:05-13:55	Instructional Center	117
Laboratory[2]	A1	T	13:05-16:55	Boggs	2-19
	A2	W	13:05-16:55	Boggs	2-19

[1]Attendance at the first lecture session is mandatory, no exceptions.
[2]You must attend the assigned laboratory section.

Course Instructors & Office Hours

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

Office Hours:
Wednesdays 10:00-11:00
Fridays 9:00-10:00

Co-Instructor: Dr. Hui Zhu
Office: Boggs 2-90J
Email: hui.zhu@chemistry.gatech.edu

Office Hours:
By Appointment

If you are having trouble with data interpretation or writing reports, please see me 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 & MestReNova; 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 **870 pts**, distributed as follows:

- six full lab reports (100 pts each) = 600 pts
- three analysis/spectral problem sets (30 pts each) = 90 pts
- six notebook checks (10 pts each) = 60 pts
- ten product sample/spectrum evaluations (10 pts each) = 100 pts
- one technique evaluation (20 pts) = 20 pts

Grades will be assigned as follows:

- 783 pts (90%) guarantees an A
- 696 pts (80%) guarantees a B
- 609 pts (70%) guarantees a C
- 522 pts (60%) guarantees a D

Pre-Lab Exercises: 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.

Laboratory Reports: Grading will be according to the scoring cover page available for each experiment. The cover page should be printed out by the student and attached to the front of the laboratory report. Laboratory reports are due according to the table below. *Laboratory reports that are not submitted on time will receive a 20 pt (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. It is possible to submit a late report and still earn no credit for the report. (*e.g.* If a report is submitted three weeks late but earned only 60 pts after grading, a score of zero will be recorded.) Assignments must be submitted within four weeks of the due date in order to receive credit.

Assignments that are not submitted within four weeks will be awarded zero points. No late assignments will be accepted after Tuesday, November 24, 2015 at 5:00p. There will be no exceptions to this deadline. *Lab Report Guidelines and the Grading Rubric can be found on T-Square.*

Regrade requests should be submitted in writing to Dr. Stephens no later than one week following the return of the graded assignment to the student. (i.e. If the assignment is returned to the student on Tuesday, the regrade request should be submitted by the following Tuesday.) A written case should be made for why the student believes that deducted credit should be returned for an answer or detail and should be attached to the front of the original graded document. The instructor reserves the right to regrade the entire assignment.

Analysis/Spectral Problem Sets are worth 30 points each. These will be handed out during lecture on Monday, September 21, 2015, Monday, October 19, 2015, and Monday, November 9, 2015 and will be due during the lecture following when they are handed out. These are designed for you to analyze various 2-D NMR and solve structures based on the spectra provided. Each problem set will have two problems/structures to solve.

Notebook Checks are worth 10 pts each and are to be performed for each experiment. Your notebook will be checked at the beginning of the laboratory period to ensure that you have included a written procedure and other pertinent details as outlined in each experimental package. Completed notebook page duplicates should be submitted at the end of experiment and will be graded for completeness and details. See the Notebook Guidelines for further details of what is to be included.

Product and Spectral Quality Evaluations will be based on your submission of a product sample and/or spectral data for each experiment as designated in each experimental package. Products will be graded for amount, purity, dryness, and color. Spectra will be graded for quality. Failure to produce product/submit a sample or the required spectra will result in a grade of zero being recorded for that evaluation. The lowest product/spectral quality score will be dropped at the end of the term. However, score of zero for which a student did not attend lab will NOT be dropped.

Technique and Performance Evaluations will be based on how well you perform in the laboratory. This includes, but is not limited to, promptness, preparedness, how often you break or spill things, independence, how well you follow the laboratory policies and safety instructions (see Laboratory Policies & Safety), and cleanliness. The TAs and Instructor are watching! If you leave a mess at the balances or frequently bring noxious chemicals outside of the hood, your grade will suffer.

Assignment Due Dates

See the course schedule for experiment dates. In general, lab reports will be due at the beginning of lab during the week following experiment completion, with the exception of Exp 6.

Assignment	Sections A1	Sections A2
Exp 1 Lab Report	Tues, Sept 8, 2015	Wed, Sept 9, 2015
Exp 2 Lab Report	Tues, Sept 29, 2015	Wed, Sept 30, 2015
Problem Set 1	Mon, Sept 28, 2015	Mon, Sept 28, 2015
Exp 3 Lab Report	Tues, Oct 20, 2015	Wed, Oct 21, 2015
Problem Set 2	Mon, Oct 26, 2015	Mon, Oct 26, 2015
Exp 4 Lab Report	Tues, Oct 27, 2015	Wed, Oct 28, 2015
Exp 5 Lab Report	Tues, Nov 3, 2015	Wed, Nov 4, 2015
Problem Set 3	Mon, Nov 16, 2015	Mon, Nov 16, 2015
Exp 6 Lab Report	Tues, Nov 24, 2015	*Tues, Nov 24, 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.