Chem 445L Spring 2013

Laboratory for Synthesis and Analysis of Organic Compounds

Course meetings:	Section 1: Monday	12:30 -5:20 pm	Bilger Addition 217
	Section 2: Thursday	12:00 - 5:00 pm	Bilger Addition 217

Instructor:	T. Hemscheidt	hemscheii@hawaii.edu
	Bilger 321B	808-956-6401

Office hours: I will be meeting with each lab group for 15 min each week to discuss the work to be done in the next lab period. I expect you to be well prepared and to revise your work plan on the basis of our discussion.

For any further meetings with me you can make an appointment. Please do!

Course Objective: The objective of Chemistry 445L is for students to develop a broader practical understanding of modern techniques and instrumentation used in a synthetic organic chemistry laboratory. CHEM 445L has WI classification, so expect to do a fair amount of writing, to have this writing critiqued and to revise your write-ups on the basis of that feedback before a final grade is assigned to your report. In keeping with the rules governing the assignment of the "WI" designation, the writing part of this course will earn you a significant portion of the final grade of the lab course. The purpose is to teach you to write technical reports accurately, concisely and to communicate your findings clearly. Shoddily produced documents, ridden with spelling and grammatical errors, will be returned without review (Note that scientific terms often are underlined in red by MS Word despite being spelt correctly).

Prerequisites: Chem 273 and Chem 273L; Declared Chemistry or Biochemistry Major

Corequisites: Chem 445

Absences: If for any reason (and it better be a good one) you can't make it to lab, you need to notify ASAP me and your lab partner. I am not interested in drama stories about broken cars etc.

Grading:

4 Lab Reports	**= 400 points**
Preparation for group meeting	**= 200 points**
General Lab Techniques	**= 200 points**

Each group member is responsible for writing their own report and is solely responsible for its content. The reports should each be a minimum of five pages long (12 point, double spaced, standard 1 inch margins) excluding figures and supplementary materials and attachments.

> Note: The point of the exercise is to write or learn to write clearly and, ideally, concisely. Writing concisely is hard and requires a serious effort in terms of editing and rewriting. Place more emphasis on clarity than on conciseness. Do not feel obligated to press everything into five pages! At the same time, please have mercy on us and don't "run out of the mouth".

All reports should be typed and contain the fruits of your reading about the techniques used and be fully referenced. The idea behind the "WI" course designation is to get you to learn the material through independent study and writing. Make sure that you learn about proper referencing from the links provided in the rubric, which is posted on Laulima in your lab section's folder.

Failure to reference appropriately is plagiarism and will result in an automatic "F" in the course.

The first two lab reports may be reworked, and if the resubmitted report meets the critique then the score may increase by up to 20 points for each. (Note: it does not pay to submit a lousy first draft). Submit a printed copy and an electronic file. Both versions must be identical (there is nothing like "almost identical"). Instructions will be forthcoming on how to submit the electronic file.

The remainder of the points (200 points each) will be assessed based on:
1) level of preparation for the lab as demonstrated in our weekly meeting

and

1) effort and attitude
2) success in your laboratory work (yield, purity, number of times a reaction has to be repeated).

Report due dates: Hard copy: At the beginning of the lecture on the dates shown, electronic copy EOB same day. Only if both are submitted, is report submission complete.

	Section 1	**Section 2**
Report 1 (Weeks 1-5)	02/20/13	02/15/13
Report 2 (Weeks 6-7)	03/13/13	03/01/13
Report 3 (Weeks 8-11)	04/10/13	04/05/13
Report 4 (Weeks 13-15)	05/01/13	04/26/13

Late Reports: **There won't be any late reports! The penalty is going to be 10%/day or part thereof.** Make sure that you keep your dog, infant child, SO away from your paper and keep the windows closed so that the tradewinds can't blow them out the window.

Writing Intensive: Attached to this syllabus is a "writing rubric" that will be used to evaluate the reports you will be submitting.

The general format for a full paper in Journal of Organic Chemistry is to be followed. A laboratory report has a brief *Introduction* into the problem you have been studying; a *Results* section in which you document your measurements and calculations; a *Discussion* section in which you document what you have learned from performing the experiment and place your results into the context of the background materials you have read; an *Experimental* section in which you describe how you performed the experiments in sufficient detail that somebody could reproduce your results. Compounds are numbered in bold face Arabic numerals in order of appearance in the text. Numbers in the text should of course correspond to those in the Figures and Schemes. *Figures* are referenced in the text in order of appearance and figures have *Legends*, brief descriptions of what the figure is purported to show. Explain any symbols used. *Schemes* are similarly numbered in order of appearance in the text and have brief *Headers*, brief descriptions of what the scheme is about. *References* point the reader to

material that you have consulted. References are numbered consecutively in the text. Use a consistent format: denote references by superscript numbers. In a separate reference section list these references. Please follow American Chemical Society format outlined in the ACS style guide (e.g., Clueless, I. M.; Knownot, I. M. *J. Irreproduc. Res.* **2009**, *10*, 176-178.)

Code of Conduct: Academic honesty policies can be found at the following website: http://www.studentaffairs.manoa.hawaii.edu/policies/ . Students are expected to familiarize themselves with these rules. ***Any student caught violating the policies on plagiarism or cheating will receive a grade of an "F" in the course.***

CHEM 445L Spring 2013

Lab Schedule (approximate)

Week		Section 001
1	Safety orientation, lab orientation, intro techniques	01/07/13
2	Reduction of ethyl-2-methylacetoacetate, TLC monitoring	01/14/13
3	MLK holiday	01/21/13
4	Determining the ratio of products, column chrom., NMR	01/28/13
5	Ester reduction, product isolation	02/04/13
6	Ketalization, NMR analysis	02/11/13
7	Holiday	02/18/13
8	Alkylation of ethyl-β-hydroxybutyrate	02/25/13
9	Determining the ratio of products, column chrom., NMR	03/04/13
10	Asymmetric catalysis of aldol, work-up and isolation	03/11/13
11	Spectroscopy	03/18/13
12	Spring Recess	03/25/13
13	Diastereoselective reduction of keto-alcohol	
14	Determining the ratio of products, column chrom., NMR	04/01/13
15	Alkylation of EtOAc with cinnamaldehyde	04/08/13
16	Workup and characterization, osmylation	04/15/13
17	Workup and analysis (NMR/HPLC)	04/22/13
	Reserve	04/29/13