

## CHEMISTRY 211L

### INSTRUCTOR

David Dawson

#### Contact Information:

Office

CW 216

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Sections

A, B

Room

AH 206

Time

M, T 2:00 – 6:00 p.m.

**Office Hours:** 30 minutes before lab.

Required Text: The Organic Chem Lab Survival Manual, A Student's Guide to Techniques by James W. Zubrick. Any edition will work.

Required Text: Most of the procedures are from Experiments in Organic Chemistry by Hill and Barbaro, 3<sup>rd</sup> edition.

Recommended Notebook: The Official Laboratory Research Notebook. This notebook has lots of useful information on the last page. The only requirement for the notebook is that it be bound.

Lab Web Sites: <http://facstaff.cbu.edu/~ddawson/211L>

Required for Lab: Goggles, a completed safety quiz and a willingness to learn. Gloves are HIGHLY RECOMMENDED.

From the Catalog: **CHEM 211L. ORGANIC CHEMISTRY I LABORATORY**

This course is designed to teach the student the techniques of organic chemistry as well as to carry out reactions discussed in class. Some of the techniques presented are distillation, recrystallization, and extraction. The experiments will teach the proper methods of carrying out reactions. Prerequisites: CHEM 114, 114L. Prerequisite or co-requisite: CHEM 211. Offered in the Fall semester. One semester; one credit.

Objective: The objective of the lab is to teach the student how to carry out a reaction safely, how to separate products from each other and finally, how to identify the products formed in the reaction. The importance of keeping a notebook will also be stressed.

Grading: The grade will consist of six sections.

- 1) Experiments
- 2) Advanced Study Assignments
- 3) Lab Skills
- 4) Final Exam
- 5) Quizzes
- 6) Safety Quiz

Experiments are worth 25 points.

Lab Skills are worth 5 points.

Advanced Study Assignments are worth 5 points.

Final Exam is worth 100 points.

Quizzes are worth 50 points.

Safety Quiz	10 X 1 =	10
Experiments	25 X 12 =	300
Lab Skills	5 X 12 =	60
Advanced Study Assignment	5 X 13 =	65
Final Exam		100
Quizzes	10 X 5	<u>50</u>
		585

### Experiments and Lab Skills

Lab skills are given each lab. Failure to follow safety rules, repeated failures in lab procedures and not being prepared for lab will result in a reduction in the lab skills grade.

**LAB SKILLS WILL BE DEDUCTED FOR EACH DIRTY DISH, PIPETTE, or UNLABELED GLASSWARE LEFT IN HOODS.** For example, if 10 pipettes are left out after lab is over, all 5 lab skills points for the lab that day will be deducted from **EVERYONE IN THE LAB EVEN** if you left lab before everyone left.

Data sheets will be provided for the results in the lab. The data sheets will be handed out at the beginning of lab. Data sheets are due at the end of the next lab.

**IF YOU TURN IN ANY DATA SHEET AFTER THE LAST DAY OF CLASS, IT WILL NOT BE ACCEPTED.**

If a student turns in a data sheet after the experiment has been graded, the maximum grade possible for the data sheet will be the lowest standard grade that was made. For example, if for

experiment three, everyone who turns in a data sheet on time loses one point for the mechanism and one point for calculations, twenty three will be the maximum score allowed for anyone else turning in a data sheet for experiment three.

### Advance Study Assignments (ASA)

Advance study assignments will be handed out before lab and will be collected before the lab starts. Failure to have the ASA complete will result in a student not being allowed to start lab. ASA's must be worked independently with no outside help except books and the internet. The ASA must be complete of everything on the procedure.

IT MAY BE ADVISABLE TO COPY YOUR ASA BEFORE YOU TURN IT IN.

### Final Exam

The final exam will be a combination of the techniques and experiments carried out in lab.

### Safety

SAFETY WILL BE CHECKED AT THE BEGINNING OF LAB. YOUR SAFETY MUST INCLUDE THE CHEMICALS TO BE USED THAT WEEK WITH SOMETHING FROM THE Safety Data SHEET. Only writing down what is in the lab procedure book will result in no credit for safety in the notebook.

### Observations and Conclusions.

The observations should be completed in lab and will be checked when you leave lab. Failure to be checked out of lab will result in partial credit. Information should be written in your notebook first and then transferred to your data sheet. If students are seen writing information down on the data sheet first, the data sheet will be confiscated and not returned. Conclusions will be checked the lab following the one carried out. For example, lab # 1 conclusions will be checked at lab # 2.

Quizzes – Quizzes will be over material in the preceding lab. Your best nine quizzes of the quizzes will be counted. Quizzes will be given in the first ten minutes of lab. Questions about the previous lab will be taken before the quiz if needed.

Lab Details: The lab will end by 6:00 p.m. Permission is required to restart a lab if an error was made. FAILURE TO GET PERMISSION WILL RESULT IN THE LAB NOT BEING COUNTED.

Lab Room Check: The lab will be checked after every student has left the lab. Points will be deducted if the lab is found to be in a dirty state or something is left open. Some examples of previous lab penalty points are the following: the tops left off of solvent or reagent bottles, disposable pipettes left sitting on the benches or hoods, leaving a hot plate turned on, chemicals left on the balance, chemicals left in a beaker, a chemical spill that was not cleaned up. This list is not a complete list of possible problems with the lab. It is okay to leave Variacs, heating mantles, and hot plates on the lab bench if they are still hot/warm.

Absences: Attendance is required at every lab. Labs can be made if you have an excused absence.

MAKEUP LABS: Missing one lab will result in your lowest lab being counted for your missed lab. Missing two labs requires a makeup lab.

Three strikes rule

Organic lab follows the three strikes rule. A student that has three strikes against them in one lab period will be excused from lab. In certain cases, one strike may be enough to be dismissed from lab. Some examples of strikes in lab (not a complete list) would be not wearing safety glasses, not following safety directives or doing something that endangers other students. Students cannot appeal strikes and some strikes may be assigned to students in an arbitrary fashion and at the discretion of the professor. Labs in which a student has been dismissed **CANNOT BE MADE UP**.

**IF YOU ARE EXCUSED FROM LAB, YOU HAVE TO LEAVE LAB. IF YOU DO NOT LEAVE LAB, SECURITY WILL BE CALLED.**

Outside lab work: Lab work can only be carried out when Dr. Dawson is present. You must work in pairs if you are doing lab work outside of scheduled times.

Significant figures: Molecular weight, formula weights, and compound weights should be measured to four significant figures.

Before lab starts: The first five minutes will be used to put away clean glassware.

**Scale:** There are many scales in organic chemistry lab (e.g. small scale, miniscale, and microscale). It is very possible that the labs will be run at a smaller scale than what is in the procedure. It will be pointed out before each lab starts as to the scale of the lab for that week. A smaller scale is usually better for the safety of the student and for the environment.

Schedule is for the Monday lab at the beginning of the week.

**Fall 2019**

<u>Expt. #</u>	<u>Date</u>	<u>Experiment Name</u>	<u>Section of Hill and Barbaro</u>
1	8/19	Safety	G1-1 – G3-4 T9 – 1 – T9 – 5
1	8/19	Purification of Maleic Anhydride	Handout
2	8/26	Mixed Melting Point	Handout
3	9/9	Distillation	T4 -1 – T4 -10 Procedure: Handout
4	9/16	TLC	T7-1 – T7 – 8 E3 -1 E3-3
5	9/23	Extraction of Pigments from Spinach	T5-1 – T5-13 E4-9 – E4-12
6	9/30	Isolation of Limonene from Oranges	Handout
7	10/7	Alkyl halides	Experiment 8B E8-7 – E8 – 8
8	10/21	Chiral amine Experiment Parts 1, 2, and 3	Handout
9	10/28	Dehydration of Alcohols	Experiment 5A E5 -1 – E5-4
10	11/4	Alkene addition	Experiment 6 E6-1 – E6-4
11	11/11	Polymers	Handout
12	11/18	Qualitative Analysis	Handout
13	12/2	Final Exam/Makeup Day/Cleanup	