

CHEMISTRY 212L

INSTRUCTOR

David Dawson

Contact Information:

Office

CW 216

Phone

321-3464

Electronic Mail

ddawson@cbu.edu

Sections

A, B, and C

Room

AH 206

Time

2:00 p.m. – 6:00 p.m. T, W, R

Office Hours: 30 minutes before lab.

Required Text: The Organic Chem Lab Survival Manual, A Student's Guide to Techniques by James W. Zubrick. The 8th edition is available but any addition will work.

Required Text: Most of the procedures are from Experiments in Organic Chemistry by Hill and Barbaro, 3rd 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/212L>

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

From the Catalog: **CHEM 212L. ORGANIC CHEMISTRY II LABORATORY**

This class is a continuation of CHEM 211L. The lab will be a combination of spectroscopy, reactions, and identification of unknowns. The experiments carried out in lab will correspond to ones discussed in class. The identities of the organic unknowns will be determined by chemical and spectroscopic means. The skills learned in the first semester are used extensively in this class. Prerequisites: CHEM 211, 211L. Prerequisite or corequisite: CHEM 212. Offered in the Spring semester. One semester, one credit

Objective: The objective of the lab is to build on the techniques you learned last semester. More detailed reactions will be carried out including forming unknown products and the products will be identified through spectroscopic means.

Grading: The grade will consist of five sections.

- 1) Experiments
- 2) Advanced Study Assignments
- 3) Lab Skills
- 4) Notebooks
- 5) Final Exam

Experiments are worth 25 points.

Lab Skills are worth 10 points.

Advanced Study Assignments, and Notebooks are worth 5 points.

Final Exam is worth 200 points.

Safety Quiz	20 X 1 = 20
Experiments	25 X 10 = 250
Lab Skills	10 X 10 = 100
Notebook	5 X 10 = 50
Advanced Study Assignment	5 X 10 = 50
Final Exam	<u>200</u>
	670

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 10 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 will have a due date posted on the website. The last two experiments are due on the last day of class.

LATE DATA SHEETS WILL NOT BE ACCEPTED. 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, thirteen 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.

Notebook

The notebook will consist of five sections: Purpose, Safety, Procedure, Observations, and Conclusions. The first three sections should be done before lab and will be checked before lab starts. Failure to have these three sections complete will result in you not being allowed to start the lab. If you are seen copying this data from someone else you will also not be allowed to start the lab. 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 shortly after completion of the lab.

Lab Details: The lab will end by 6:00 p.m. TWO POINTS WILL BE DEDUCTED FOR EACH MINUTE YOU STAY AFTER 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. Only ONE lab can be made up and will be made up at the end of the semester.

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.

Dates: The dates correspond to the Monday of the week. The snow week will be used for labs that are missed due to snow. If it doesn't snow, we will take the week off.

Spring 2012

<u>Expt. #</u>	<u>Date</u>	<u>Experiment Name</u>	<u>Section of Hill and Barbaro</u>
1	1/16	Safety Lab Diels Alder	Handout Experiment 7, Procedure 7A, pgs. E7 – 2 to E7-3 (small scale)
2	1/23	Nitration 2D-NMR	Experiment 9, Procedure 9B, pgs. E9 – 8 to E9 - 9 Handout
3	1/30	Mystery Reaction 5	Mystery Reaction 5, pg. M5 – 1 to M5 - 4
4	2/6	Mystery Reaction 2	Mystery Reaction 2, pgs. M2 – 1 to M2 -2

5	2/13	Crossed-Aldol	Experiment 12, Procedure pgs.
		E12 -3 (small scale but cut by 5)	
		Acetaminophen Synthesis	Handout
6	2/20	Qualitative Analysis of Ketones and Aldehydes	Experiment 14, Procedure E14 – 3, Will perform Schiff test instead of Tollen’s test, will make Derivative 3 (semicarbazone) only
7	2/27	Synthesis of Benzil (Part 1)	Handout
	3/12	Sodium Borohydride Reduction of Benzil (Part 2)	Experiment 25, Reduction procedure pg E25 – 2
	3/12	Determination of Acetonide Stereochemistry By ^1H NMR (Part 3)	Procedure E25-4 to E25 - 5
	3/19	<i>SNOW WEEK</i>	
8	3/26	Ester formation	Experiment 18 (make any ester you want)
9	4/9	Biodiesel	Handout
10	4/16	Synthesis Lab	Own Procedure
11	4/23	Check-out/Clean-up/Makeup	