

Chemistry 332 Laboratory Syllabus
Spring 2012

Instructor: Dr. Fernanda Burke

Office: Bradley 222

Office Hours: M: 10am-11am, T: 11am-1pm, W: 10am-11am, or anytime you can find me in my office or in the labs (Bradley 201, 202, or 208)

Contact Information: Office: 803-313-7463
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Lab Time: Wednesday: 2:30-5:30pm, Bradley 208

Objective: The objectives of the second semester Organic Chemistry lab are to use and build on the techniques learned in the first semester, to perform new synthesis reactions, and to complete the qualitative analysis of organic unknowns. The students will perform a variety of characterization tests and reactions aimed at identifying the organic unknowns. Good practices in laboratory data recording and report writing will continue to be emphasized. This laboratory experience should broaden the student's understanding of Organic Chemistry and add a practical perspective to the principles learned in the corresponding lecture.

Learning Objective: Following the completion of the Essentials of Organic Chemistry Laboratory II course the students will be able to:

- apply theoretical ideas to practical situations in the laboratory.
- safely conduct chemistry laboratory techniques involved in the synthesis, separation, and purification of organic compounds.
- improve their critical thinking and communication skills as he/she works through experiments, draws conclusions from the data, and documents the experiments through the writing of laboratory reports.
- perform analytical test to distinguish between common classes of organic compounds and to understand how these techniques are used throughout the synthesis, purification, and characterization of organic compounds.

Dates to Remember:

Jan 13:	Last day to drop a class without a grade of "W"
Jan 16:	MLK Jr. Day—NO CLASS
Jan 30:	Last day to order a diploma
Feb 27:	Last day to drop a class without a grade of "WF"
Mar 4-11:	Spring Break—NO CLASS
Apr 23:	Last day of classes
Apr 24:	Reading day

Text(s): Introduction to Organic Laboratory Techniques, A Small Scale Approach, 2nd Edition, Pavia et al., 2005

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Attendance

Policy: Attendance in the laboratory is mandatory and NO MAKE UPS will be provided, except under extreme circumstances.

Grading: Your final grade will be the average of the individual laboratory grades and a final laboratory exam. The grade for each laboratory will be based on the accuracy and yield of the experiment as well as on the quality of the written report.

Grade Scale:	90-100	A	70-74	C
	85-89	B+	65-69	D+
	80-84	B	60-64	D
	75-79	C+	Below 60	F

Laboratory Notebooks: The laboratory notebooks should be a complete record of the experimental work. The record should be so thorough and well organized that another student can repeat the experiment using your notebook and any references cited. ***You will need to purchase a composition book to use as your laboratory notebook.***

All data are to be recorded in ink, at the time they are obtained. Do **not** record anything on scratch paper to be transferred into the notebook later. If a mistake is made in the notebook, simply cross out the error and make the correct entry next to it. Neatness is desirable, but **completeness** is much more important. In addition, the notebook should represent the student's own work and should not be shared with other students in the class.

Format for the Lab Notebook:

1. Leave a few pages at the beginning of the notebook for a Table of Contents. Keep the table up to date.
2. Number the pages of the notebook. If a page is messed up, draw a diagonal line through it and start a new page (**do not remove pages**).
3. Start every new experiment on a fresh page.
4. Use just one side of the page for reporting and leave the backside blank or use it for scratch paper.

Format for Experiments:

1. Title—title of the experiment.
2. Name of partner(s).
3. Date of experiment.
4. Purpose—a **BRIEF** statement of the experimental objectives.
5. Reference(s)—for the experiment and any physical constants obtained. Include title, author, and pages used.
6. Main reaction (only included for synthesis experiments).
7. Procedure—you should usually state that the procedure followed the text and note any deviations (leave space to write deviations after the lab).
8. Table of reagents and products—list in a tabular form the **relevant** physical properties and safety information for each reactant, solvent, and product.
9. Calculation of theoretical yield (only included for synthesis experiments).
10. Observations and Data—observations and **raw** data collected during the experiment.
11. Results—actual yield, % yield, any calculated data, graphs, or charts.
12. Discussion and Conclusion—summarize the key results; discuss the results, particularly if they were not expected or if the yield was too low or too high. Describe the significance of the experiment and results (i.e. the larger application or relation to everyday life). Discuss experimental sources of error that contributed to inaccuracy of the results.
13. Post-Lab questions—only were applicable.

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Sections 1-9 are required to be completed prior to the lab. Section 10 will be completed during the lab. Sections 11-13 will be completed after the lab. The notebooks will be due by 1:00 PM on the Friday indicated on the schedule. Notebooks turned in late will incur a 10-point deduction for each day that it is late. Therefore, after 10 days I will not accept the report since it will be worth zero points.

Laboratory Schedule

Day	Date	Topic	Assignment	Due Friday
1	W, 1/11	NO LAB	-----	-----
2	W, 1/18	Syllabus, Laboratory Safety, and General Techniques	Handout & Online Quiz	Online Safety Certificate
3	W, 1/25	GC-MS Analysis of an S _N 2 reaction between 1-bromohexane and Potassium Acetate: Synthesis of Hexyl Acetate	Handout	-----
4	W, 2/1	S _N 2 reaction between 1-bromohexane and Potassium Acetate Lab cont'd	Handout	S _N 2 Rx Report
5	W, 2/8	The Analysis of Antihistamine Drugs by GCMS	60	-----
6	W, 2/15	Antihistamine Drugs Lab cont'd	60	-----
7	W, 2/22	Preparation of the Grignard Reagent: Phenylmagnesium Bromide	33	-----
8	W, 2/29	Benzoic Acid	33B	Lab 60 Report Lab 33/33B Report
9	W, 3/7	Spring Break	-----	-----
10	W, 3/14	Nitration of Methyl Benzoate	43	-----
11	W, 3/21	Sulfa Drugs: Preparation of Sulfanilamide	46	-----
12	W, 3/28	Sulfa Drugs Lab cont'd	46	-----
13	W, 4/4	Analysis of Diet Soda by HPLC	54	Lab 43 Report Lab 46 Report
14	W, 4/11	Qualitative Analysis Lab Part I	55/Handout	-----
15	W, 4/18	Qualitative Analysis Lab Part II	55/Handout	Lab 54 Report Qual Report

*Each student is expected to read the laboratory procedure and any related essays or techniques associated with the laboratory experiment. In addition, each student must complete sections 1-9 of the laboratory report **BEFORE** coming to lab. Students cannot begin an experiment until the pre-lab assignment is completed and checked by the laboratory assistant.*

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General Education Goals

General education is the set of fundamental skills (reading, writing, reasoning, and oral communication), the knowledge, and the capacity for thought needed to pursue further learning, to succeed in chosen fields, and to assume the responsibilities of informed and enlightened citizenship.

Communication Skills

USC Lancaster helps its students read effectively and attain a basic familiarity with the basic texts of the Western and other cultures. In the area of writing skills, USC Lancaster students work to develop the ability to write effectively for both academic and professional audiences. In addition, USC Lancaster helps its students learn to listen critically and speak effectively before a group.

Critical Thinking

USC Lancaster helps its students acquire analytical reasoning abilities and exercise informed value judgments. USC Lancaster students also work to develop mathematical and/or computational skills.

Cultural Literacy

USC Lancaster strives to give its students an understanding of the history and culture of Western civilization as well as provide some exposure to other cultures. USC Lancaster also recognizes the centrality of science and technology to modern culture; therefore, USC Lancaster students also are offered opportunities to increase their understanding and familiarity in these crucial subject areas.

Student Development

USC Lancaster supports the intellectual, personal, physical, and social development of students, in recognition of the critical interdependency of all these areas. By providing opportunities for productive interaction with students, faculty, and staff, USC Lancaster helps students develop a spirit of curiosity, integrity, and confidence in planning and pursuing academic, career, and personal goals.