

Introduction to Organic Chemistry Laboratory – CHEM 211L

Syllabus and Course Information Sheet

Professor: Dr. Jeff Piquette

Office: C-210

Office Hours: M-F 11-noon, M & W 1-2 p.m.
(or by appointment)

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Prerequisites: Chem 111/L

Meeting Times: F, 2:00 p.m.—3:50 p.m.

Co-requisite: None

Classroom: C-313

Textbooks: Bettelheim & Landesberg (1997). *Experiments for Introduction to Organic Chemistry, A Miniscale Approach*. Brooks/Cole. ISBN: 0-03-019238-2. Available in the bookstore.

Materials: Approved Safety Goggles
A Scientific Calculator
Molecular Model Kit (optional)

Objectives: To develop general organic laboratory skills (equipment, handling, observation, analysis, etc.)
To reinforce some topics presented in the “lecture” part of the course

Tentative Course Schedule

Date	Experiment
Jan 21	Check-in, Safety, Syllabus, etc.
Jan 28	#4 MP, BP, Sublimation
Feb 4	#3 Distillation
Feb 11	#6 Extraction of Caffeine from Tea
Feb 18	#6 Continued
Feb 25	#7 ID of Hydrocarbons
Mar 4	#7 Continued
Mar 11	Appendix I – IR
Mar 18	Appendix II – NMR
Mar 18	Last day to drop with a W
Mar 25	Spring Break
Apr 1	Individualized Projects
Apr 8	Individualized Projects
Apr 15	Individualized Projects
Apr 22	Individualized Projects
Apr 29	Final Exam and Check-out

Grading:	Lab Reports	70%	> 90% = A
	Product/Technique	20%	80-89% = B
	Comprehensive Final Exam	<u>10%</u>	70-79% = C
	Total: 100%		60-69% = D < 60% = F

Lab Reports: All lab reports must be typed (double-spaced with at least 1 inch margins). If you do not follow these guidelines, I will return the lab to you and count it late until you correct it. The format of the lab reports is given below.

- I. **Title**—The experiment title from the text. Also include your name!
- II. **Abstract**—A short summary of the experiment, why it was performed and the most important

results that were obtained.

- III. **Introduction**—This section gives the necessary background about and the rationale for the experiment. This might include such things as the theory behind the reaction, the balanced chemical equation, the mechanism, etc. Include structures (drawn electronically!). Basically make sure the reader knows the context and purpose of the experiment.
- IV. **Safety**— Any precautions necessary for the specific activities for a given lab.
- V. **Procedure**—Refer to the appropriate pages in the text (or elsewhere) and document any deviations from the procedure. The reader should be able to duplicate *exactly* what you did!
- VI. **Data & Calculations**—This section should include all calculations (using appropriate significant figures), tables, descriptions, spectra, etc. concerning the work you did in the experiment. Spectra may be attached as appendices if that is easier. One table that I expect for almost every lab is the reagent table. This is a tabulation of reactants, products, catalysts, and solvents. The purpose of this table is to help you with yield calculations, purification, and characterization. I will expect you to put the appropriate kinds of information in this table based on the specific experiment being performed. The example below is just that, an example. More or less information might be included depending on the specific lab, the specific chemical, etc. All calculations must be shown electronically (not hand-written).

Compound	M.W.	Amount (g or mL)	# Moles	Density (g/mL)	m.p. (°C)	b.p. (°C)	Solubility
Acetic acid	60.0	5.7 mL	0.998	1.0492	16.6	118	W, al, act, bz
Benzoic acid	122.0	1.22 g	0.010	-----	122	-----	0.34g/mL w

- VII. **Discussion/Conclusions**—In this section, you are pulling everything together to give the reader the “take-home” messages from the lab. I want this section to follow this format: 1) directly re-state the objective(s), 2) state whether or not you met the objectives, 3) give supporting evidence as to why you either met or did not meet the objectives, 4) discuss any errors that were made, 5) offer suggestions to improve the lab if you had to run it again, 6) discuss any other interesting aspects of the lab (such as new skills or concepts you learned outside the realm of the objectives, any discrepancies you found compared to expected or accepted results, etc.), and 7) end with appropriate concluding remarks that summarize the most important messages the reader should take away with them. This section will be graded for content, grammar, and spelling.
- VIII. **Problems**—Answers to any assigned problems (i.e. prelab and/or postlab questions)

Sections I-V constitute the pre-lab and must be completed before coming to lab. The only exception to this is section II, the abstract. Clearly, the results cannot be given at the start of the experiment. The instructor will check your notebook at the beginning of each lab session. Completed lab reports are due one week after completing the experiment *at the beginning of the lab period!* Lab reports turned in after this time are considered late and will be penalized 10% per day.

Product/Technique: A large portion of your grade will be based on my evaluation of your lab technique and the quality of your products/experimentation. I will be watching you every single week and making notes about your technique, safety, etc. Tardiness and preparedness are also a part of this grade.

Final Exam: A comprehensive final exam will be given to test your knowledge of the skills and concepts learned in lab. A study guide will be available at least one week prior to the exam.

Individualized Projects: During the later part of the semester, teams of students will pick a project to work on. They will be given as much freedom in choosing the project as possible in light of the course objectives, equipment and materials available, safety concerns, time required, etc. All projects must be approved by the instructor. More information on these projects will be distributed later.

Policies:

1. No makeup labs will be given. If you cannot attend the lab section each week and your absence is excused (and prearranged), I will consult with you individually about making up the work. You must have documentation for me to excuse the absence and work with you about making up the lab.
2. Do your own work. I expect no plagiarism of the resource materials or other students' work. Cheating of this kind will result in a failing grade for the course. You will be working in pairs each week and may be allowed to turn in one lab for the pair. I will let you know when this is an option. Regardless, similarity between lab reports will be watched for closely. I encourage you to work together with your fellow students, but I don't want to see any "cold spiking."
3. Use of cell phones during lab is prohibited. Abuse of this policy will affect your technique grade.

How to Succeed:

1. See me when you have questions. I love interacting with students. It's why I got into teaching. I really do want each of you to learn the material and get good grades.
2. Don't get behind. Be prepared each week! I can't emphasize this enough.
3. Strive for understanding – don't just "get through" the material.

This university abides by the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, which stipulates that no student shall be denied the benefits of an education "solely by reason of a handicap." If you have a documented disability that may impact your work in this class and for which you may require accommodations, please see the instructor as soon as possible to arrange accommodations. In order to receive accommodations, you must be registered with and provide documentation of your disability to: the Disability Resource Office, which is located in the Psychology Building, Suite 232.

Have a great semester and don't hesitate to contact me if you have questions about the course!