

Chemistry 235 Syllabus
Organic Chemistry I Laboratory
Spring 2016

REQUIRED LAB MATERIALS: Laboratory Experiments for Organic Chemistry – Available On-Line, goggles, apron, and laboratory notebook.

COREQUISITE: Chemistry 233

GENERAL INSTRUCTIONS:

- Experimental Procedure: A pdf file for each experiment can be accessed and downloaded via the link below. **You are responsible for printing out and bring the experimental procedure to lab with you each week.**
<http://community.wvu.edu/~josbour1/pages/Chem235.html>
- Safety and Laboratory Rules: Before any laboratory work is permitted, you must read the WVU "Safety and Laboratory Rules for Organic Chemistry" and then sign a statement that you will abide by these rules.
- Clothing: NOTE: SAFETY GOGGLES AND LABORATORY APRONS ARE REQUIRED FOR ORGANIC CHEMISTRY LABORATORIES. They can be purchased at the University Bookstore. Proper lab attire is the equivalent of a T-Shirt, Pants that cover from the waist to the ankles, and shoes that cover the entire foot. Tank tops, muscle shirts, spaghetti strap tops, tube tops, backless shirts, are all on the UNACCEPTABLE list. Slip on shoes that cover the tops of their feet but leave the heel area exposed are also UNACCEPTABLE.
- Notebook: Use a bound hardback composition style notebook for recording you laboratory observations and results. You must bring this notebook to each laboratory meeting.
- Laboratory Fee: Every student enrolled in Chem 235/236 must pay the laboratory fee assessed by WVU. A registration restriction will be imposed if the fee is not paid. The laboratory fee is not refundable after the first week of classes. A charge for excessive breakage will also be levied.
- Attendance: If you are forced to miss a laboratory period due to illness or an emergency, contact your instructor and teaching assistant. There are no makeup labs for Chemistry 235.
- Quiz: A quiz will be given each week at the beginning of the laboratory period, so be on time! Study the experiments before you come to the laboratory! You are expected to understand the principles of the experiment and to know what you are going to do before coming to the laboratory.
- Final Exam: The final exam will cover material from the first lab to the last lab. Missing the final exam counts for zero.
- Your Teaching Assistant is in charge of your laboratory section. Follow instructions made by your TA concerning lab safety, keeping the lab clean, procedures, handing in assignments, etc. Do not be hesitant about asking your TA questions-- he/she is there to help you. Failure to heed the instructions of your TA will result in a lower TA subjective grade.

Fill in your TAs contact information incase you need to get in touch with him or her.

Lab TA: _____

Email: _____

Mailbox: _____

Schedule of Experiments Spring 2016

Week	Week Of	Experiment	Subject
1	Jan 11		Check-In Laboratory Safety Discussion
2	Jan 18	3	Melting Points
3	Jan 25	4	Crystallization
4	Feb 1	5	Distillation
5	Feb 8	6 7	Gas Chromatography Thin Layer Chromatography
6	Feb 15	8	Extraction
7	Feb 22	9	Stereochemistry – Each student should bring molecular models to lab.
8	Feb 29	19	Two Step Synthesis of Diphenylacetylene
9	Mar 7	17	Hydroboration-Oxidation of Alkenes
10	Mar 14	22	The Diels-Alder Cycloaddition Reaction
-	Mar 21		<i>Spring Break – No Lab</i>
11	Mar 28	14	Substitution Reactions
12	April 4	21	Synthesis of a Polymer: Nylon 6,6
13	April 11	TBD	TBD
14	April 18	-	Lab Final Exam, TA Evaluations, and Checkout
15	April 25	-	<i>No Lab</i>

Grade Calculation

Notebook (pre-lab questions, experimental write-up, calculation, etc.)	40%
Experimental Results/Unknowns	10%
Quizzes	20%
Lab Final	20%
TA Subjective Grade (neatness, attitude, etc.)	10%

Disclaimer: *The schedule, policies, and assignments within this syllabus are subject to change in the event of extenuating circumstances.*

Academic Integrity: *The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, I will enforce rigorous standards of academic integrity in all aspects and assignments of this course. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the Student Conduct Code at the Student Conduct Code at http://studentlife.wvu.edu/office_of_student_conduct.*

Inclusivity Statement: *"The West Virginia University community is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion. If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with the Office of Accessibility Services (293-6700). For more information on West Virginia University's Diversity, Equity, and Inclusion initiatives, please see <http://diversity.wvu.edu>."*

LABORATORY NOTEBOOK

During the Chemistry 235 laboratory you must preliminarily outline (experiment title, date, introduction, theory) and report experimental procedures/data/results/conclusions for each experiment in your laboratory notebook. You must bring this notebook with you to each lab period.

What is the purpose of a laboratory notebook?

The laboratory notebook allows confirmation/replication of experimental results and findings. If properly signed and dated, the notebook also establishes intellectual ownership and verifies first to invent. The laboratory notebook can be used as legal evidence in judicial proceedings and patent applications.

Who owns the laboratory notebook?

If you are carrying out research or laboratory testing procedures for a company (e.g. pharmaceutical company) or within academia, the corporation/institute that sponsored (financially or intellectually) or sanctioned your research/work has ownership of the laboratory notebook.

For Chem 235, you will be considered the intellectual stakeholder and will have ownership of your own laboratory notebook.

What should be included in the Chem 235 laboratory notebook?

Given below are some general guidelines of things to include in the laboratory notebook.

- The ***Experiment Title and Date, Introduction, Theory, Table of Reagents, and Pre-lab Questions (Items 1-5 below)*** sections constitute your experimental outline and must be completed before you may begin work on the experiment.
 - The ***Experimental Procedure, Results, Data/Calculations, and Conclusion*** sections must be completed as you work through the experiment.
 - ***Post-lab Questions*** can be completed once you have finished the experiment.
1. **Title and Date:** Include experiment title, date, numerical designation, pertinent literature references, etc.
 2. **Purpose:** State the purpose of experiment or short statement of what will be covered/studied during the experiment and why. Also include conditions, apparatus, long term plans, preliminary calculations, safety concerns/considerations.

Should include ***“hypothesis-type”*** statements such as “it is expected that” or “the results should show.”
 3. **Theory (Reactions and Mechanisms/Techniques and Concepts studied):** This includes chemical reactions with mechanisms, instrumental theory, equations pertinent to the experiment.
 4. **Table of Reagents:** Construct a tabular list of compounds that will be used with pertinent physical properties (e.g. molar masses, densities, melting point, ect.)
 5. **Pre-lab Questions**

6. **Experimental Procedure and Results:** This is a step-by-step written account of procedure recorded as you perform experiment. Record what YOU did during the experiment and not what the lab manual says to do. Record: weights of materials actually used, record YOUR raw data, experimental results, and observations, include charts, or tables of data, calibration information, repair, or maintenance information.

This will include “*experimental-type*” statements such as “30.0 mL of liquid acetone was added to 1.3 mg of solid sample #1” or “it was found that the solution turned blue after 10 minutes.”

7. **Data and Calculations:** Record your data collected during the lab (i.e., melting point, boiling point, refractive index of synthesized compound) and any calculations (i.e., theoretical yield, percent yield).
8. **Conclusion:** This is a statement summing up the experiment, explaining data and why the experiment did or did not work for you, list possible sources of error and how such an error would affect the results, make suggestions for improving the procedure or your performance, include future plans (What would be the next step to continue the research?)
9. **Post-lab Questions**

What are some laboratory notebook DO's?

- DO use a pen. Black pen is best.
- DO include a Table of Contents on the first 1-2 pages. (Leave the first 1-2 pages blank and update the Table of Contents throughout the semester.)
- DO include the date, experiment title, and signature on each page.
- DO sign and date each new entry. Best date: 12 May 2009 NOT 5/12/2009 which can be mistaken for 5 Dec. 2009 in Europe.
- DO begin a new experiment on a blank page.
- DO fix errors by drawing a single line through the incorrect entry and writing the correction above or below the incorrect entry.
- DO initial and date the correction!!
- DO include a description and/or drawing of apparatus used.
- DO include usual (temperature, ambient pressure, etc.) and unusual (power outage, hurricane, fire, etc.) laboratory conditions.
- DO list your name on the outside and inside cover.
- DO list some type of contact information on the inside cover in case of loss.
- DO include the course title, semester date, section number, desk number, teaching assistant name (supervisor/project director in industry/academia), lock number, and room number on the inside cover.
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What are some laboratory notebook DON'TS?

- DON'T use pencil.
- DON'T erase or use white-out to delete entries.
- DON'T scribble over or write over mistakes. Draw a single line through incorrect entry, write correction above/below; initial and date correction.
- DON'T skip pages or leave pages blank. If a page or portion of page is left blank, place a large X on the entire blank area, initial and date.
- DON'T rip out pages (except for the carbonless copy for grading purposes).
- DON'T record data on scraps of paper. Record all data in the laboratory notebook.
- DON'T record data/observations at a later time. Record as the experiment is completed.