CHEM 231.01A: Organic Chemistry I Lab
Spring 2022

**Time & Location:** Tuesday, 5:00-7:50 pm, Caputo 331

**Lab Instructor:** Dr. Maria Schiza ♦ maria.schiza@millersville.edu ♦ Office: Caputo 219, tel.# 717-871-7437

**Office Hours:** Mon 10-11 am, Wed 10-11 am & 3-4 pm, Fri 10-12 pm
Alternative times can be scheduled by appointment or virtually through Zoom.

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**Lab Description and Objectives**

The lab in CHEM 231 provides the opportunity for organic chemistry students to develop hands-on technical skills and safe work habits. Key objectives include the ability to:

1. **Work** with appropriate attention to lab safety, specifically attire and proper waste disposal.
2. **Set-up and break-down** of apparatus for carrying out chemical reactions.
3. **Perform** specific lab techniques including reflux, distillation, separation, filtration, and recrystallization.
4. **Keep** an organized record of lab experimentation and data in a laboratory notebook.
5. **Represent** organic molecules properly, recognize any functional groups, and explain their reactivity based on drawn mechanisms using curved-arrow notation.
6. **Characterize** organic compounds using their physical and chemical properties as well as spectroscopic techniques such as UV-Vis, IR, NMR, and MS.

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**Required Materials for Lab**

   or **Regular Safety Glasses** - https://tinyurl.com/3cdrjt3z
2. **Life Sciences Lab Notebook Carbonless** (100 Sheet Set) TOP PAGE PERFORATED — https://tinyurl.com/uh2v94x3 ISBN: 978-1930882096
3. **A COMBINATION LOCK** – NOT A KEY LOCK!
4. **Blue/Black Pen**
5. **Molecular Model Kit for Organic Chemistry (same as for lecture):** ASIN: B01NCU854K on Amazon, https://tinyurl.com/ModelKit22
6. **Regular use of D2L to access lab materials**

**Note:** You MUST purchase the required lab notebook. 10% will be deducted from each lab that you do not have the correct lab notebook.
Lab Policies

- **Attendance:** Students must complete every experiment. If you cannot attend a scheduled lab for reasons in the University-Approved Guidelines, please contact your instructor as soon as possible to arrange an alternate time.

- **Academic Honesty:** Students are expected to conduct all work in an honest and ethical manner consistent with University policy. Labs are carried out with a partner and discussion of results, concepts, and analysis is encouraged. However, all written work must be independent work.

- **Safe Environment:** Lab instructors help guide your experimentation. You are expected to follow all directions regarding safety precautions and lab attire. Your eyes, legs, and feet should be covered at all times, and gloves worn as recommended. Please notify your instructor of any special concerns (allergies or pregnancy) that might require alternate arrangements for your work. You must also keep lab equipment and spaces clean and tidy. Failure to follow these rules may incur a 5% penalty on the week’s assignment.

- **Cooperative Environment:** Students are expected to be actively engaged in the classroom, so questions and comments are encouraged. Repeated disruptive behavior (like tardiness, chatting, or electronic noise/use) may be cause for dismissal from lab and may affect final grade assignments. Students with special concerns are encouraged to speak with me or take advantage of student resources available on campus, including the Office of Learning Services, the Tutoring Center, or the Counseling Center. The safe and productive educational environment for this class includes compliance with Title IX as outlined in Millersville’s policy (end of syllabus).

Lab Expectations

Students are expected to come to class each week with an understanding of the basics for the planned lab. All recordings for wet labs must be competed in the lab notebook. You must hand in all lab reports in order to pass the lab portion of the class.

For Wet Labs: Notebook Needs to Include

1. **Table of Contents:** Maintain a list of titles and pages for each lab.

   **Before Lab**

   **Pre-Lab Work:** Pre-lab work, outlined in the instructions, must be completed in the lab notebook and written legibly in **black or blue ink**, before lab begins. Failure to properly prepare for the week’s pre-work may incur up to a 20% penalty. Carefully read and understand the experimental procedure and plan your lab work **before** the lab period. **Pre-lab work may be one column across the whole page.**

2. **Pre-Lab Work should include:**
   - **Title:** Start recording each experiment with its title on a new page.
   - **Date:** Record the date on which work is done. Add a second date as appropriate.
   - **Pre-Lab Assignments:** Complete as instructed.
   - **Procedure Steps:** after the pre-lab assignment is completed, divide your lab notebook in two columns. Write the procedure steps (**black or blue ink**) on the LEFT column in a bulleted format.

**Note:** the carbon copy of the pre-lab work from the lab notebook, will be collected in the beginning of each new lab!
During Lab

In-Lab work: should be neat, completed in the lab notebook and written legibly in black or blue ink in the two-column format. Observations and data collection and recordings made on the RIGHT and procedure steps made on the LEFT (already done as pre-lab work).

3. In-Lab work should include: (to be completed during lab)

RIGHT COLUMN
- Primary Data: Relevant information MUST be recorded as you do each experiment. This portion of your notebook does NOT need to be neat but must be complete and clearly labeled.
- Collected Data: Record ALL data, observations, or measurements from the experiment directly into your notebook. Each person must have ALL data recorded by hand in their own notebook.

LEFT COLUMN
- Experimental Record: On the LEFT column, you should add notes about any changes made to the procedure or any problems that arose and may have affected your results.

After Lab

Post-Lab Work: Post-lab work (data analysis and post-lab questions/assignments) should be written in the lab notebook (legibly in black or blue ink). Post-Lab work may be one column across the whole page.

Final Lab Reports

Final Lab Reports: Your final lab report includes all pages from your notebook for each wet lab: prelab-work, in-lab work (collected data, analysis and interpretation of data for the lab, supporting spectra), and post-lab work/questions/assignments. Due weeks are listed in the lab schedule table below. All final lab reports need to be scanned and made into a single pdf file for submission to a D2L assignment folder.

- Final lab reports also need to be submitted for dry lab packets/worksheets, as single pdf files to a D2L assignment folder.
- Credit will be deducted for “late” reports. All lab reports should be submitted (even if they are late) in order to pass the course. Late submission may incur up to 5% penalty per day, unless previously arranged with the instructor.

Grading

Each experiment will be graded out of 100%
All experiment scores will be used to determine a Lab Average%
Total lab points possible for CHEM 231 grade: 250 pts
Lab score = 250 pts x Lab Average%
This schedule is tentative and subject to alteration by inclement weather and instructor discretion. Please check D2L for updated information each week. Each lab is due during your lab period of the week indicated in ‘Due’ column. **Wet labs are bolded.**

<table>
<thead>
<tr>
<th>Lab</th>
<th>To be carried out Wk of:</th>
<th>Due Wk of:</th>
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</thead>
<tbody>
<tr>
<td>LAB 1. Check-In, Safety, Structures, Orbitals</td>
<td>January 17th (week 1)</td>
<td>January 24th (week 2)</td>
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<tr>
<td>LAB 2. IR Spectroscopy</td>
<td>January 24th (week 2)</td>
<td>January 31st (week 3)</td>
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<td>LAB 3. Recrystallization</td>
<td>January 31st (week 3)</td>
<td>February 7th (week 4)</td>
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<td>LAB 4. Acid-Base Extraction</td>
<td>February 7th (week 4)</td>
<td>February 21st (week 6)</td>
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<td>LAB 5. Conformers; Molecular Models Part 1 (*Bring Molecular Model Kit)</td>
<td>February 14th (week 5)</td>
<td>February 21st (week 6)</td>
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<tr>
<td>LAB 6. Stereochemistry; Molecular Models Part 2 (*Bring Molecular Model Kit)</td>
<td>February 21st (week 6)</td>
<td>March 14th (week 9)</td>
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<td>LAB 7. Grignard Reaction</td>
<td>February 28th (week 7)</td>
<td>March 14th (week 9)</td>
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<tr>
<td><strong>SPRING RECESS</strong></td>
<td><strong>NO LAB (week 8)</strong></td>
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<td>LAB 8. NMR problem set 1</td>
<td>March 14th (week 9)</td>
<td>March 28th (week 11)</td>
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<td>LAB 9. $S_N^2$ Reaction</td>
<td>March 21st (week 10)</td>
<td>April 4th (week 12)</td>
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<tr>
<td>LAB 10. NMR problem set 2</td>
<td>March 28th (week 11)</td>
<td>April 11th (week 13)</td>
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<td>LAB 11. Thin Layer Chromatography</td>
<td>April 4th (week 12)</td>
<td>April 11th (week 13)</td>
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<td>LAB 12. Elimination Reaction</td>
<td>April 11th (week 13)</td>
<td>April 18th (week 14)</td>
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<td>LAB 13. Limonene Extraction</td>
<td>April 18th (week 14)</td>
<td>April 25th (week 15)</td>
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<td>Make-up lab: Aspirin Check-Out</td>
<td>April 25th (week 15) due in lab</td>
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Title IX Statement
Millersville University and its faculty are committed to assuring a safe and productive educational environment for all students. In order to meet this commitment, comply with Title IX of the Education Amendments of 1972, 20 U.S.C. §1681, et seq., and act in accordance with guidance from the Office for Civil Rights, the University requires faculty members to report to the University’s Title IX Coordinator incidents of sexual violence shared by students. The only exceptions to the faculty member’s reporting obligation are when incidents of sexual violence are communicated by a student during a classroom discussion, in a writing assignment for a class, or as part of a University-approved research project. Faculty members are obligated to report to the person designated in the University Protection of Minors policy incidents of sexual violence or any abuse of a student who was, or is, a child (a person under 18 years of age) when the abuse allegedly occurred. Information regarding the reporting of sexual violence and the resources that are available to victims of sexual violence is available at www.millersville.edu/titleix.