

Instructor: Ogar Ichire (PhD)

Lab meets Mon - Thurs

TA:

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Lab: Olin 232

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Office hours: Open door (via zoom)

Required Materials:

Text: Laboratory Techniques in Organic Chemistry, Fourth Edition

Mohrig, et. al., W.H. Freeman and Co., © 2014, ISBN 978-1-4641-3422-7 (Techniques - **required**)

CATALYST Organic Chemistry Lab, CHEM 2461, 2462, 2463 by J. Hornback (some labs – not required)

Students will be **required** to wear safety ***goggles, nose mask*** and ***lab coat*** during lab.

A laboratory notebook (see lab notebook requirements)

Canvas Access (labs and postlabs will be posted to Canvas)

Additional References available: <https://www.organicdivision.org/links/>

Course Philosophy:

This course is designed with the educational goals and mission of the University of Denver and the Chemistry Department in mind. The chemistry department's mission is to develop confident, well-prepared students who can contribute to the society on issues relating to modern chemistry and scientific discovery. Students are expected to develop strong oral and written communication skills, engage in critical thinking, develop excellent laboratory skills, work on independent research projects, and prepare for careers in industry, academia, and other professional fields.

In keeping with this mission this course aims to develop the following skills:

1. Know and use standard laboratory techniques.
2. Know and use basic analytic tools, techniques, and instrumentations.
3. Use and critically analyze chemical literature.
4. Communicate scientific issues in writing.
5. Apply current chemical theory/content to solving problems.
6. Investigate some applications of organic chemistry.

Organic Chemistry Lab aims to achieve the following objectives:

- To reinforce the fundamental laboratory techniques and procedures utilized in organic chemistry I, as well as the analytical techniques introduced in organic chemistry II.
- To make use of chemistry reference materials in identifying the chemical properties and hazards associated with each chemical that is utilized or created in the laboratory. The pre-lab assignment for each experiment will require you to compile this information in a table format in your lab notebook.
- To effectively communicate an understanding of chemical theory in writing, which is critical for all practicing scientists. This skill can only be developed through practice; hence, each lab will include a post-lab or lab report assignment that will require you to effectively communicate your lab outcomes, interpret the results, and explain how they relate to the relevant chemical theories.

Organic Chemistry III Laboratory

For organic chemistry III, we will work on some named reactions and applied labs. But first, we will learn how to use a common database called SciFinder-n to obtain primary literature information, references and to do searches. Typically, a good literature search is a natural first step performed by a chemist before heading to the lab to run any reaction. ScFinder, now SciFinder*n*, is the key database used by organic chemists for this task and for planning before carrying out reactions in the lab. The lab activity on Scifinder will show you how to search for known compounds, reaction procedures, vendors, analytical data, and even research a scientific topic of interest.

Parts of a Lab Assessment

Pre-lab assignments:

Before the start of each lab, you will be required to complete a pre-lab assignment, also known as the "before-you-begin" (BYB) assignment, in your laboratory notebook. The pre-lab assignment will include a reading section that introduces you to the lab topic, and it is expected that you read and complete this section before attending the lab. It is worth noting that the lab topics or projects may not have been covered in class, but the materials provided, including the techniques book, lab procedure, and SciFinder search, will be sufficient for the lab – **the lab is standalone** from the lecture. Therefore, we expect you to read the research papers, lab procedures, techniques book, and successfully complete the lab and the post-lab questions. Your prelab grade will be based on a one or two-page summary of the assigned reading, which will account for 10 points. It is imperative that you take the reading seriously and ensure that you have a clear understanding of the lab topic.

Doing the Lab and Lab Performance:

It is expected of you to attend the lab sessions and conduct each experiment. There will be no opportunities for make-up labs. The lab portion of your grade will be based on how well you perform and how prepared you are for the lab. 20 points will be awarded for attendance and completion of the lab, while another 20 points will be awarded for your level of preparedness.

To earn the full 20 points for your lab performance, it is crucial that you come well-prepared, pay close attention to lab techniques, maintain safety and cleanliness, and complete the lab within the designated timeframe. Points will be deducted for failing to have a lab procedure ready, using your cell phone during the lab, spilling chemicals, leaving drawers unlocked, behaving inappropriately, using equipment incorrectly, touching doorknobs with gloves on, or leaving your glassware outside your assigned drawer at the end of the lab. All shared glassware must be washed and returned to its designated location.

Post-lab assignments (Reports):

A post-lab assignment or report will be required for each lab, and it must be submitted either at the start of the following lab session or on Canvas, as per the schedule. Unless otherwise specified, all post-labs must be typed. Late submissions of post-labs or reports will result in a point deduction as per the following guidelines: for every day that the submission is late, five points will be deducted, with a deduction of 10 points for every two days, and so on. A post-lab or report that is a week late from the due date will receive a deduction of 30 points.

Course Grading:

Your score in the course will be determined using a point system shown below:

<i>Areas evaluated:</i>	<i>Frequency x Points</i>	<i>Total Points in Area</i>	<i>Approximate Percentage of Grade</i>
Pre-lab (Reading summary is worth 10 pts)	6 × 20	120	13.3 %
Doing the Lab and Lab performance	6 × 40	240	26.6 %
Post-lab or Reports	6 × 60	360	39.9 %
Lab Project	80	80	8.8%
<i>Scifinder Activity</i>	<i>100</i>	<i>100</i>	<i>11.1%</i>
<i>Total Points</i>		<i>900</i>	<i>100%</i>

Grade	Range	Grade	Range
A	100 – 94 %	C-	<74 – 70%
A-	<94 – 90%	D+	<70 – 67%
B+	<90 – 87%	D	<67 – 64%
B	<87 – 84%	D-	<64 – 61%
B-	<84 – 80%	F	<60 – 0%
C+	<80 – 77%		
C	<77 – 74%		

Note: Final grades and percentage ranges are subject to change by the instructor

Students are expected to retain all returned graded materials until final grades are assigned at the end of the course.

Please keep all graded assignments that are returned to you until a final grade has been assigned for the course. It is YOUR RESPONSIBILITY to check for grading errors. Individual scores will be posted on Canvas as soon as they become available.

Laboratory Safety: To ensure safety in the laboratory, it is imperative that students pay close attention to basic laboratory skills, techniques, the use of personal protective equipment (PPE), and the handling of chemicals with varying levels of associated hazards and toxicity. The University has taken steps to minimize students' exposure to hazardous chemicals, fumes, and potential accidents by equipping the chemistry labs with fume hoods and providing safety procedures to ensure the best practices are followed in the labs.

It is expected that all safety procedures outlined in each experiment are followed, and that the fume hoods provided are used. Failure to comply with these safety measures can result in a zero for that particular lab, and repeated neglect and safety issues can lead to a failing grade (F) for the course.

Attendance: To earn full credit for each lab, attendance is mandatory for every lab session, and being present at the assigned starting time is crucial. There are no makeup labs available, and if for any reason you are unable to attend a lab, a score of zero will be awarded for that particular lab.

Academic Integrity:

While I advocate collaborative learning and teamwork, I also firmly believe that everyone should maintain the highest ethical standards. As such, I support and will strictly enforce the Honor Code of the University of Denver. www.du.edu/honorcode.

Honor Code Statement.

All members of the University of Denver are expected to uphold the values of *Integrity*, *Respect*, and *Responsibility*. These values embody the standards of conduct for students, staff, faculty, and administrators as members of the University community. These values are defined as:

Integrity: acting in an honest and ethical manner.

Respect: honoring differences in people, ideas, and opinions.

Responsibility: accepting ownership for one's own conduct.

Pioneer Pledge.

As a University of Denver Pioneer, I pledge:

- to act with INTEGRITY and pursue academic excellence.
- to RESPECT differences in people, ideas, and opinions and;
- to accept my RESPONSIBILITY as a local and global citizen.

Because I take pride in the University of Denver, I will uphold the *Honor Code* and encourage others to follow my example

Labs:

Note - the labs might change

Date	Lab		Assignments Due	Reading (techniques book)
Wk1 03/27	No Lab			Chapter 1
Wk2 04/03	Lab 1 SciFinder Activity (SA)			
Wk3 04/10	Lab 2	Williamson Ether Synthesis	Pre-lab 2 (20 pt) (SA)	See Pre-Lab
Wk4 04/17	Lab3	Heck Reaction	Pre-lab 3 (20 pt) Post-lab 2	See Pre-Lab
Wk5 04/24	Lab 4	Domino Reaction	Pre-lab 4 (20 pt) Post-lab 3	See Pre-Lab
Wk6 05/01	Lab 5	Polymer	Pre-lab 5 (20 pt) Post-lab 4	See Pre-Lab
Wk7 05/8	Lab 6	Dyes	Pre-lab 6 (20 pt) Post-lab 5	See Pre-Lab
Wk8 05/15	Lab 7	Project I	Pre-lab 7 (20 pt) Post-lab 6	See Pre-Lab
Wk9 05/22		Project II	Post-lab 7	Product