

Instructor: Dr. Ogar Ichire (Leo)

TA:

Office: Olin 205A

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Email: ogar.ichire@du.edu

Office hours: Open door

Lab meets: Mon – Thursday

Lab: Olin 232

Format: In person

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**)

PPE: Lab coat, covered toe shoes, long pants, and goggles

Canvas Access: Lab materials will be uploaded in Canvas

Essential Materials:

Technology: laptop, tablets wireless, stylus pen, headphones, printer, scanner(or scanner apps)

Additional References available: [Scifinder-n](#) [WebMO](#) <https://www.organicdivision.org/links/> [Synthetic Organic Chemistry Techniques](#).

Course Philosophy:

This course is designed according to the educational goals and mission of the University of Denver and the Chemistry Department. The chemistry department's mission is to develop confident students with a strong foundation in chemical science through application of chemical concepts and techniques in problem solving in the laboratory, lecture, and society. For this course, students are expected to advance the departments mission through fostering critical thinking skills in organic synthesis and to develop excellent hands-on laboratory skills including the ability to read laboratory literature and research papers in organic synthesis.

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

1. Standard lab techniques.
2. Analysis of chemical literature.
3. Writing and communicating scientific reports.
4. Current chemical theory/content to solving problems.

In particular this organic chemistry Lab will meet these goals by:

1. Introducing common laboratory techniques, reaction set ups, and procedures used in chemistry for synthesis and characterization of organic compounds. You will be introduced to new techniques with each lab, and it is expected that you develop an understanding of the chemical basis for each technique. A description of the technique and procedure will be included in your pre-lab assignment. The first day of lab will begin with appropriate safety precautions and procedures and you will be given a safety quiz if applicable. At the end of the course a cumulative test on lab techniques will be given, or you will perform a final lab with various lab techniques if time permits.
2. Using chemistry reference materials (Safety Data Sheets) to identify chemical properties and hazards associated with each chemical that we use and make in lab. Part of each pre-lab assignment is to gather this information into a table format in your lab notebook.
3. Introducing and reading of chemistry literature and to effectively communicate an understanding of chemical theory in writing which is essential to all practicing scientists. The only way to establish these skills is through practice. Therefore, each lab will include a reference paper and post-lab assignment which will ask you to effectively communicate your understanding of literature papers, lab results, interpret the results, and explain the relevant chemical theories associated with the lab.
4. Introducing green chemistry as a step to mitigate some of the problems in our world and community. We will discuss green chemistry in relation to our laboratory work. You will be asked to analyze lab procedures to illustrate green principles.

Organic Laboratory

This organic chemistry laboratory is designed to help you learn lab techniques and skills, so it is important to attend lab and on-time, come prepared to learn, and be equipped mentally to complete the lab. Assessment of your laboratory preparedness will be graded in the pre-lab assignments due at the beginning of each lab. Also, your performance is tied to your preparedness and performance will be assessed during lab. Finally, there will be a lab report or post-lab assignments at the end of each lab for you to complete. Also, to ensure that you are mastering lab techniques and basic reaction setups, you will be tested on the major lab skills throughout the semester and at the end with a lab final if COVID-19 does not interrupt our labs. Alternatively, random skill/technique test will be assessed each lab and used as the lab final.

Parts of a Lab Assessment

Pre-lab assignments: **Read chapter ONE of the techniques book (Compulsory)**

Each lab will have a pre-lab assignment to be completed in your laboratory notebook. The laboratory notebook handout provides the structure for what is required of each pre-lab assignments. These assignments are designed to help you with the following: understand new lab techniques, be prepared to complete lab in a timely fashion, and to ensure safety. Therefore, pre-lab question assignments will be due at the **beginning** of each lab. No lab without a prelab. Points will be deducted for late prelab assignments.

Lab Performance: **Read chapter TWO TO FIVE of the techniques book (Compulsory)**

This part reflects your preparedness for lab, attention to lab techniques, safety, cleanliness, and your success in the lab. You will lose points for behaviors that violate safety rules and/or demonstrate poor lab skills. For example, not having a lab procedure ready, use of cell phone in lab, spilled chemicals, unlocked drawers, inappropriate conduct, using equipment incorrectly will result in point deductions. Please see the lab performance rubric for more details. In addition, the TA reserves the right to ask any student to leave the lab if he/ she deems that the student is been unsafe and endangering the safety of others. Note, no points will be awarded for that lab if you are asked to leave because of safety concerns.

Post-lab assignments (Reports):

Each lab will have a post-lab (or report) assignment due at the **beginning** of a lab period according to the schedule. **Post-labs should be typed unless noted.** Late lab reports will lose points according to the following guidelines: 1 day late (-5points), 2 days late (-10points), and a week late (-30points). No lab over 7 days late will be accepted.

Course Grading:

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

<i>Areas evaluated:</i>	<i>Frequency x Points</i>	<i>Total Points in Area</i>	<i>Approximate Percentage of Grade</i>
Pre-lab	8 × 20	160	16 %
Lab performance and techniques and Attendance	8 × 50	400	40 %
Post-lab	8 × 30	240	24 %
Safety Quiz & Safety Monitor (compulsory)	50(20&20)	50	10%
Lab Final	50	50	
Safety Exercise and Chemical information hunt	100	100	10%
Total Points		1000	100%

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 coursework 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: (Lab Safety Quiz is compulsory)

Mastery of chemistry requires that you know basic laboratory skills and the handling of chemicals with various levels of associated hazards. The University has taken the necessary steps to minimize student risks by equipping chemistry labs with the necessary equipment and gadgets that lower student exposure to hazardous chemicals as well as a vibrant set of safety procedures and requirements for students to follow before and during lab periods. However, students need to embrace and follow all safety measures outlined for each laboratory and consult the safety data sheet (SDS) for each chemical used or produced. Failure to comply with safety guidelines can result in a zero point for that lab and repeated problems can result in an F grade in the course.

Every student must read and sign the Laboratory Safety Rules sheet and take the Safety Quiz before working in the lab.

Attendance:

Regular attendance is expected and required. You must be in the lab at the assigned starting time to receive full credit for the lab. If you plan to miss a lab for any reason, please contact the TA and instructor for alternate arrangements. If time and space allow, you can make up the lab in another section, otherwise you may earn no credit for a missed lab.

Note: Because of COVID-19, alternative labs will not be available this quarter.

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

Lab Due Dates:

Date	Lab		Assignments Due	Reading (techniques book)
WK1 9/12	NO LAB		CH1 - 6	
Wk2 9/19	Introduction to Organic chemistry lab Safety, and Syllabus			<i>Chapter 1</i>
	Introduction to Organic chemistry lab and organic chemistry reactions			<i>Chapter 2-3</i>
	Computational Chemistry (Comp1)			<i>Chapter 8</i>
WK3 9/26	Lab 1A & 2A	Solubility and Miscibility Exploration	Pre-lab 1A & 2A (20 pt) Comp1	<i>See Pre-Lab</i>
WK4 10/3	Lab 1 Part B	Unknown Solid	Pre-lab 1B (20 pt) L1	<i>See Pre-Lab</i>
WK5 10/10	Lab 2	Colorful extraction	Pre-lab 2B (20 pt) Post-lab 1	<i>See Pre-Lab</i>
WK6 10/17	Lab 3	Chromatography Separation (Subject to change)	Pre-lab 3 (20 pt) Post-lab 2	<i>See Pre-Lab</i>
WK7 10/24	Lab 4	Synthesis of Salicylic acid from Wintergreen oil	Pre-lab 4 (20 pt) Post-lab 3	<i>See Pre-Lab</i>
WK8 10/31	Lab 5	TBA (Subject to change)	Pre-lab 5 (20 pt) Post-lab 4	<i>See Pre-Lab</i>
WK9 11/7	Lab 6	Green Oxidation	Pre-lab 6 (20 pt) Post-lab 5	<i>See Pre-Lab</i>
WK10 11/14	Lab 7	Optical Activity and Refractive Index	Pre-lab 7 (20 pt) Post-lab 6	<i>See Pre-Lab</i>
		Final	Post-lab 7	

Covid-19 Guidelines:

Class Attendance: Attendance should be in person and in accordance with the University of Denver and NSM policy - you should not attend class when you are sick, test positive to COVID-19 or when you have been exposed to people who have or may have COVID-19.

Food and Drinks: No eating or drinking in the lab.