NEW YORK UNIVERSITY
Department of Chemistry
Spring 2022

CHEM-UA 225 ORGANIC CHEMISTRY I LABORATORY

Course Instructor: Prof. Hong Zhao
Office: 434 Waverly
Email: hz19@nyu.edu

Course Materials:


There are also two copies on reserve at the Bobst library, but are subject to availability (Accessibility of these copies within 36 hours before your assignment due date may be limited and this is not a valid excuse for not completing an assignment by the due date). Plan ahead.

Required Notebook: *Student Lab Notebook, Organic Chemistry, 100 Carbonless Duplicate Sets,* Hayden McNeil*

Required Laboratory Equipment (commonly referred to Personal Protective Equipment, or PPE): Laboratory safety goggles, disposable laboratory coats, disposable gloves.

I. Course Description

This course is intended to strengthen major concepts and techniques in organic chemistry through laboratory experiments. The Organic Chemistry I Laboratory course will provide training in the techniques of the organic chemistry laboratory, such as carrying out chemical reactions and purification of chemical mixtures. Purification methods such as recrystallization, extraction, distillation, and chromatography will be utilized. Chemical identification and purity will be determined by analyzing data from methods such as chemical tests, thin-layer chromatography (TLC), nuclear magnetic resonance (NMR) spectroscopy, and infrared (IR) spectroscopy.

III. Safety

The safety of you and your peers is our highest priority. For the laboratory to be a safe environment, all of the occupants must be aware of procedures, policies, and hazards associated with each experiment. Students should be familiar with of the location and operating procedures for all laboratory exits and safety related equipment (e.g. safety shower, eye-wash, fire blankets, fire extinguishers, emergency phones). Other chemistry faculty might visit the laboratory without notice and are allowed to enforce laboratory safety rules at any time.

III-i. Experiment Preparation and Prompt Arrival

To operate safely in the laboratory you must be prepared. Students must arrive at the laboratory thoroughly prepared for the experiment, including a properly prepared laboratory notebook. Students that are unprepared for a laboratory experiment are a safety risk and will be removed.
from the laboratory, receiving a “0” for that experiment. The laboratory lecture is an integral part of the preparation for an experiment at which time safety instructions might be explained to you. Therefore, students who are 1-20 minutes late more than once may not be allowed to carry out the experiment (and will be subject to grade deductions for each tardy event). Students arriving to laboratory more than 20 minutes late or during/after the laboratory lecture will not be admitted, receiving a “0” for that experiment.

III-ii. REQUIRED Personal Protective Equipment (PPE)

1) **Safety goggles** must be properly worn at all times by all occupants of the laboratory, even if you are not working with chemicals, otherwise you will be removed from the laboratory and not permitted to compete the experiment. Goggles can be purchased from the NYU bookstore. 2) **Protective gloves** must be worn at all times in the laboratory. You may purchase a box of 100 disposable nitrile gloves from the stockroom in the organic teaching laboratory and/or a pair of rubber gloves from the bookstore. We recommend purchasing both the nitrile gloves (for everyday lab use) and the rubber gloves (when needed). Nitrile gloves, while more comfortable to wear, will not protect you well against halogenated solvents such as dichloromethane. Latex-based gloves are NOT allowed. While wearing gloves, do not touch areas that are commonly touched without gloves (e.g. door knobs, staplers).

3) **Laboratory coats** must be worn at all times in the laboratory. You may purchase a set of 12 lab coats from the stockroom in the organic teaching laboratory.

The three PPE items listed above (safety goggles, protective gloves, and laboratory coats) are for LABORATORY USE ONLY. Do NOT wear these items outside of the laboratory even if you think they are clean.

4) **Clothing that covers your legs** must be worn at all times in the laboratory.

5) **Closed shoes** (no part of your foot or ankle is exposed) must be worn at all times in the laboratory.

III-iii. Basic Laboratory Rules

1) No **food, gum, or drinks** are allowed in the laboratory.

2) No **cell phone** usage is allowed in the laboratory.

3) No **personal items such as coats, backpacks, etc.** are allowed in the laboratory at any time. Please plan accordingly. Note that general lockers are available on the 4th floor of Silver to store your personal belongings BEFORE you enter the laboratory. These lockers are on a 5-hour timer, i.e. they will open automatically after 5 hours. A limited number of non-electronic lockers (for use with personal locks) are available on the 4th and 5th floors of Silver. Personal items left in these lockers for more than 5 hours will be donated to charities.

4) It is the student’s responsibility to ensure that a full set of communal glassware (a set is located below each half of each hood) is present and clean at the end of every laboratory session (if there are any issues with this glassware upon arrival in the lab, the section instructor must be informed immediately). Broken communal glassware may be replaced for free at the stockroom.

III-iv. Chemical/Glassware Handling and Spills

1) Treat all chemicals with caution.
2) Waste must be disposed in appropriate waste bottles. When in doubt, ask where to dispose of chemicals. NO chemicals may be disposed of down any drain. Note that there are (a) trash cans for paper and lab coat disposal, (b) barrels with lids for gloves and glass waste disposal, (c) containers in the waste hoods for solid chemical waste disposal, and (d) labeled bottles for specific liquid waste disposal.

3) Read the Fire/Injury Instructions located on the columns in the laboratory.

4) Alert the instructor if there is a spill. Never leave any spill or trash (contaminated or not) at a balance, in your hood, or any other place in the lab.

5) If you accidentally over-dispense a chemical, dispose of it in the proper waste container. NEVER return chemicals to the bulk container.

6) Do not transport an uncapped flask out of the fume hood.

7) Do not raise the fume hood sash above the recommended level (half way up).

8) Never use glassware or laboratory equipment if it appears to be broken. Report all broken communal items to your instructor and replace all broken personal items immediately.

IV. Attendance (and in case of absence)
You must complete at least 70% of the experiments (7 of the 10 laboratory experiments) and associated work (assigned report or post-lab assignment) as well as the final exam in order to be eligible to receive a passing grade for the course. Two lowest experiment grades will be dropped in the end. If you miss or anticipate missing three lab sessions, all due to a chronic illness or other extreme circumstance, schedule a meeting with the course Instructor of Record (Prof. Hong Zhao) as soon as possible. In this case passing the course is unlikely, but an Incomplete status may be considered.

V. Grading and Other Requirements
You will receive a single grade for the combined organic chemistry lecture and laboratory portions of the course. You must independently pass both the lecture and the laboratory portions of the course in order to pass this joint course. That is, failure to pass either portion of the course results in an overall failing grade. A score of 55% is necessary to pass the laboratory portion of the course.

<table>
<thead>
<tr>
<th>Pre-lab quiz</th>
<th>20%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notebook</td>
<td>5%</td>
</tr>
<tr>
<td>Results</td>
<td>5%</td>
</tr>
<tr>
<td>Safety/Technique</td>
<td>5%</td>
</tr>
<tr>
<td>Laboratory Post-lab Assignments</td>
<td>35%</td>
</tr>
<tr>
<td>Final Exam (Written)</td>
<td>30%</td>
</tr>
</tbody>
</table>