Hunter College CHEM 225 Organic Chemistry Lab 2

Fall 2021

IMPORTANT: STUDENTS REGISTERED FOR THIS LABORATORY COURSE MUST ALSO BE REGISTERED FOR AND ATTEND THE ACCOMPANYING RECITATION

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Read Me Carefully

Welcome to CHEM 225 Lab

We will be doing both in-person labs and virtual labs. They are both important and contribute equally to your grade in this course,

PREQUISITES Organic Chemistry I Lab (CHEM 223); Pre/co-requisite: Organic Chemistry II Lec (CHEM 224)

REQUIRED TEXT Pavia, Kriz, Lampman, and Engel, A Small Scale Approach to Organic Laboratory Techniques, 4rd Ed., Brooks Cole. Also required is the Hunter Chemistry Department CHEM 225 Laboratory Manual, Fall 2021 version.

LIST OF LABS

1	On-line	1	Chiral Reduction of Ethyl Acetoacetate
2	**In-person**	2	Reduction of Camphor
3	On-line	3	Synthesis of a Benzoic Acid from an Unknown Aryl Bromide: Using the Chemical Literature
4	**In-person**	4a	A Multi-Step Synthetic Sequence Benzoin Condensation using KCN
5	On-line	4b	A Multi-Step Synthetic Sequence: a) Green Synthesis of Benzoin b) Oxidation of Benzoin to Benzil
6	**In-person**	4c	A Multi-Step Synthetic Sequence: a) Benzil to Tetraphenylcyclopentadienone b) to Dimethyl Tetraphenylphthalate
7	On-line	5	The Chemistry of Diazonium Ions
8	**In-person**	6	Qualitative Organic Analysis, FG Tests
9	On-line	7	IR & NMR Workshop
10	**In-person**	8a	Purification and Analysis of a Binary Mixture of Organic Compounds
11	**In-person**	8b	Analysis of a Binary Mixture - cont.
12	On-line	8c	Preparation of Derivatives
13	**In-person**	8d	Analysis of a Binary Mixture - completion
14	On-line	8e	Student Presentation of Binary Mixtures

COURSE DESCRIPTION You learned some basic laboratory techniques in Orgo 1 Lab (CHEM 223), and now you should be able to work more independently. You will work individually during all in-person experiments.

In addition to carrying out several organic synthetic reactions, you will separate and identify the compounds in an unknown binary mixture. These identifications will require the use of both chemical and spectroscopic methods to identify the functional groups in your compounds. You will be required to consult other sources in addition to your laboratory text in this endeavor. In the synthesis experiments, you may not be given the procedures in as complete detail as in Orgo 1 lab. You will incorporate your experience and information from the recitation and textbook to fill in the details as needed before you go to the laboratory. You will have to plan your own allotment of time. In order to avoid falling behind, you may have to carry out two or more tasks in parallel. Such multi-tasking is typical of a real research lab.

The importance of studying the recitation material and applying what you have learned cannot be exaggerated. Don't let yourself become one of the disappointed students who receives a lower grade in the entire course due to a low recitation score.

SAFETY & CODE OF CONDUCT You are required to watch the safety videos posted on Bb and complete the Safety/Code of Conduct Agreement and submit to your lab instructor before the start of the first in-person experiment, Experiment 2.

ONLINE LABS Please be aware that the instructors in this course may request that the camera and/or audio be on during online class sessions. According to CUNY policy, students who participate in any class with their camera on or use a profile image are agreeing to have their video or image recorded solely for the purpose of creating a record for students enrolled in the class to refer to, including those enrolled students who are unable to attend live. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live.

Success in the online labs (Bb Collaborate sessions) will require the same commitment that you bring to the lecture course. We will adopt the same rules and norms (take notes, participate by asking and answering questions, wear classroom-ready clothing, etc.).

- For everyone's benefit, join the course on time from a quiet place.
- Your video should be turned on whenever possible.
- Mute your microphone, unless you are actively involved in conversation.

For the CUNY Policy on Acceptable Use of Computer Resources see:

https://www.cuny.edu/wp-content/uploads/sites/4/page-assets/about/administration/offices/cis/it-policies/ComputerUsePolicy1.pdf

IN-PERSON LABS You will work individually during all in-person Labs. The key to success is planning your work carefully before you enter the laboratory. The total time allotted for each lab period is 2 hours and 45 minutes. You must leave the lab at the end of this time so that the staff has ample time to prepare for the next session.

- No work will be allowed out-side the scheduled time period, including cleaning your glassware and taking melting points.
- Do not store any personal belongings in your assigned drawer, except goggles and gloves.

LABORATORY SAFETY

SAFETY GOGGLES AND MASKS MUST BE WORN AT ALL TIMES IN THE LABORATORY

ALL LAB WASTE MUST GO IN THE CORRECT CONTAINER, AS MANDATED BY FEDERAL LAW

All students must acquaint themselves with the safety features of the laboratory and the procedures to be followed in the case of an emergency, and includes understanding the proper safety practices and safety information on all

chemicals and procedures used. This information can be learned in part by watching the safety video posted on Bb, and from other resources available to you. Please see the Lab Manual for more information on Safety.

Failure to comply with safety rules will result in the deduction of points and/or ejection from the laboratory.

MAKING UP A LAB Contact your lab instructor to make up a virtual lab for which you have a valid excuse to miss.

You might be able to make-up a missed in-person lab session but only once for the entire semester, and only with the permission of the lab coordinator. The absence must be due to an emergency or a valid reason that the lab coordinator deems legitimate.

First, contact your lab instructor and the lab coordinator as soon as possible after your absence (or before your absence, if it is anticipated in advance). Then, obtain a Make-Up Permission Form from the Chemistry Lab Stockroom (Room 1414, Hunter North) and confirm (day/time) for the make-up section with the Stockroom staff. Arrange to meet with the lab coordinator (Dr. Philip Hamann). Be prepared to explain the reason for your absence, provide documentation if requested, and select times on when you would be able to make up for the missed lab based on the schedule of experiments. Obtain the signature of the lab coordinator on the make-up form for final approval ,and attend the authorized make-up section. Only one in-person lab make up will be allowed per semester. You may be asked to withdraw from course if you miss too many scheduled sessions.

Every makeup lab during a time when that same experiment is being done by another section. Please make every attempt to attend all your regular lab sessions and reserve make-ups for emergencies only. Permission for make-ups will not be granted in cases of student misconduct (e.g., thrown out of lab for violating rules) or negligence (e.g., slept in, forgot about class, etc.). If it proves to be impossible to have you make up the absence in the laboratory, you might be assigned a make-up written report that will likely take more time than the lab would have to complete. Whether this happens or not depends on the lab missed.

THE LABORATORY NOTEBOOK You need a bound lab notebook dedicated solely to this lab course. A loose-leaf or spiral notebook is NOT acceptable. The notebook entries need to be sufficiently complete and well organized so that anyone who reads it, such as a fellow student, can know what was done in each experiment and can do the procedure from what's written in your notebook, including reproducing any mistakes that were made, if they wish to. This laboratory notebook has essentially the same requirements as a notebook used to record data in a research laboratory. All data are to be recorded at the time they are observed or obtained. This includes weights, boiling and melting points, observations of physical changes, results, and conclusions. Separate pieces of copy/loose-leaf paper are NOT to be used for recording data to be transcribed later. Your laboratory instructor will check your notebooks periodically to ensure that your data was properly recorded at the time you conducted the experiment. See the CHEM 223 Laboratory Manual for more information.

LAB REPORTS You will need to write a report for every experiment, due at the beginning of the lab period following the last day of the lab experiment (some are multi-day experiments). For in-person labs, the requirements are given below in the context of an example. Not all labs are identical in nature, so some variations will be appropriate, but please stay as close to the sense of the suggested format as practical to help keep the grading consistent. This example of a minimal lab report is based on an older melting point lab. Don't make your report long for the sake of being long, but, when in doubt, err towards inclusion. Deductions might be made for excessively long (padded) lab reports, or for mis-using unnecessarily fancy terms. For virtual lab days, make sure you pay attention to your lab instructor for the report requirements.

Use the computer program ChemDraw to draw structures and mechanisms, or draw them by hand very neatly. Download ChemDraw (student version) for free from the Hunter library website. Pay attention to your lab instructor who will tell you how they want your reports turned in. Your lab instructor will check your report for plagiarism, i.e., any uncredited copying from another student, the Internet, etc.

LAB RECITATION

You should consider that the recitation is the equivalent of a challenging one-credit course. Don't let yourself become one of the many students who receive a lower grade for the entire course due to lower scores on their recitation activities. It is essential from a viewpoint of safety alone to attend all the recitations, and attendance and

participation will be monitored for that reason. However, the recitation is also critical from the standpoint of your grade since your exam score and other graded portions of the recitation will account for about 20% of the total possible points for CHEM 225.

We would like to stress again the importance of studying and planning your work before you start the experiment. Students who well prepared and really understand what they are doing in the lab will enjoy the work and might even look back on their organic chemistry lab as a fun learning experience. Those who do not understand the experiments will experience frustration and, likely, failure in addition to exposing themselves and others to the risk of a serious accident.

We will do our best to help you enjoy the course and achieve successful results, but if you don't do your preparation and planning, no one will be able to help you enough for you to do a good job. If an instructor determines that a student has not adequately prepared for an experiment, the student will be sent away from the laboratory and will not allowed to do make-up work in another section.

GRADING Your grade will be based on the percent of a possible maximum 1,750 points. These points include lab quizzes, lab performance and participation, lab results, written lab reports, and the recitation. Keep in mind that good execution of laboratory techniques, adherence to safe laboratory practices (including cleanliness and proper disposal), the quality & quantity of the products you hand in, the organization of your work (including how well you have planned your work beforehand) and how well you understand the chemical processes that occur are all factored into your grade.

Letter Grade Cutoffs Grades will be based on the standard Hunter College grading scale.

A+: 97.50 - 100%, A: 92.50 - 97.49%, A-: 90.00 - 92.49%
B+: 87.50 - 89.99%, B: 82.50 - 87.49%, B-: 80.00 - 82.49%
C+: 77.50 - 79.99%, C: 70.00 - 77.49%
D: 60.00 - 69.99%, F: 0 - 59.99%

POINT DISTRIBUTION

	Exp	Format	Quizzes*	Perf.#	Results	Reports	Totals
1	1	Virtual Day 1	5	5	-	90	**100**
2	2	**Live Day 1**	5	5	20	70	**100**
3	3	Virtual Day 2	5	5	-	90	**100**
4	4a	**Live Day 2**	5	5	-	-	**10**
5	4b	Virtual Day 3	5	5	-	90	**100**
6	4c	**Live Day 3**	5	5	40	140	**210**
7	5	Virtual Day 4	5	5	-	90	**100**
8	6	**Live Day 4**	5	5	20	70	**100**
9	7	Virtual Day 5	5	5	-	90	**100**
10	8a	**Live Day 5**	5	5	-	-	**10**
11	8b	**Live Day 6**	5	5	-	-	**10**
12	8c	Virtual Day 6	5	5	-	-	**10**
13	8d	**Live Day 7**	5	5	80	280	**280**
14	8e	Virtual Day 7	-	5	-	95	**100**
			65	**70**	**160**	**1105**	**1400**
		Recitation	-	-	-	-	**350**
		Final Total	-	-	-	-	**1750**

*Quizzes will be offered only during your lab time or an official makeup period.
Some days will have no quiz and more performance/participation points.
#Additional performance points may be deducted for more egregious offenses.
#For virtual days, participation points will substitute.

CR/NC grade The CR/NC request must be submitted on time according to the current rules. NC implies that a student completed the course, including taking all four regular exams and the final exam. If you request CR/NC and get a B, or even an A, your transcript grade will still be CR.

An Incomplete Grade (INC) is given if a student has completed most of the course and has a reasonable chance of passing the course, but cannot complete it because of a valid reason. Issuing an incomplete grade will not be considered before the third exam. In order to be considered for the INC grade, a student needs to present verifiable proof of their reason, and must complete the course work by the end of the following semester. Warning, the majority of incomplete grades convert to a failing grade (FINC), so an INC should be considered a last resort.

Academic Integrity Hunter College regards acts of academic dishonesty (e.g., plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. The College is committed to enforcing the CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures.

ADA In compliance with the ADA and with Section 504 of the Rehabilitation Act, Hunter College is committed to ensuring educational access and accommodations for all its registered students. Hunter College's students with disabilities and medical conditions are encouraged to register with the Office of AccessABILITY for assistance and accommodation. For information and appointment contact the Office of AccessABILITY located in Room E1214 or call (212) 772-4857 /or TTY (212) 650-3230.