

Chemistry 304
Organic Chemistry Laboratory
(Sections 01-03)
Fall 2020
2:00 – 5:45 p.m. T/W/R (Sims 104)

Instructor:	Dr. T. Christian Grattan	Dr. Aaron M. Hartel	Ms. Holly Truluck	Dr. Athena Detrick
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Office Hours:	By Appointment	By Appointment	By Appointment	By Appointment

Description:

CHEM 304 introduces the fundamental lab techniques of organic chemistry. Students will perform several experiments that demonstrate reactions covered in CHEM 301-302.

Course Materials:

- Text: Anne B. Padiás, *Making the Connections: A How-To Guide for Organic Chemistry Lab Techniques*. 2nd or 3rd edition
- Notebook: *The Official Laboratory Research Notebook* or equivalent
- Goggles: Each student must purchase an approved pair of safety goggles. Only approved safety goggles are acceptable. You will not be permitted to perform the laboratory experiments without safety goggles

Objectives:

Students completing this 3-credit undergraduate course will:

1. Be able to carry out operations common to an organic chemistry lab
2. Be able to keep a well-documented record of laboratory work in a proper lab notebook
3. Become familiar with the instrumental techniques of melting point, operation IR and NMR spectroscopy, mass spectrometry, and gas chromatography, as well as the operation of and interpretation of results from the corresponding laboratory instruments.
4. Communicate the design, execution, and analysis of data from an experimental procedure in a formal report.
5. Understand the hazards associated with chemicals and chemical operations and methods for the mitigation of those hazards.

Experiment Handouts:

Handouts describing the procedure for each laboratory assignment are posted on the course Blackboard.

Prelab Briefing:

Each week in the classroom, there will be a briefing on the experiment to be carried out. These prelab briefings will be available as videos accessible from Blackboard. Students should watch the prelab briefing for each experiment prior to attending lab each week.

Laboratory Work:

Each student should report to their assigned lab station in Sims 104 to carry out the experiment. Social distancing will require lab sections to be split into two subsections, one meeting at 2:00 p.m. and the other at 3:45 p.m. Your instructor will assign you to a subsection for the semester.

Experiments should be performed individually unless instructed otherwise. Samples generated for subsequent processing or analysis must be properly labeled with the student's name and notebook experiment number. It is the student's responsibility to leave their area clean and organized for the next lab section. Failure to do so will result in a 10-point penalty on the lab report grade. **NOTE: Any student who is unprepared for lab (no notebook, no lab goggles, incomplete prelab) or violates safety standards may not perform the lab and will receive a zero.**

Post-Laboratory Analyses:

In many cases, laboratory samples must be analyzed during a time outside of lab. Contact the Chemistry Instrumentation Manager (Dr. Athena Detrick, 301B Sims, detricka@winthrop.edu) to schedule a time for such analyses.

Grading:

Each student must submit a complete Experiment Portfolio (lab report) for each experiment. Technique Experiments are graded on a scale of 50 pts and Reaction Experiments are graded on a scale of 100 pts in accordance with the Lab Report Guidelines. Late assignments will be penalized 10% per day. **No assignments will be accepted after one week from the due date.**

Final Course Grade:

The final grade for the course will be the average of the student's grades for the lab assignments (the molecular modeling exercise, lab sheets, and reports). The +/- system will be used for "A," "B," and "C" grades, according to the following ranges:

A = 93 – 100%	A- = 90 – 92.99%	
B+ = 87 – 89.99%	B = 83 – 86.99%	B- = 80 – 82.99%
C+ = 77 – 79.99%	C = 73 – 76.99%	C- = 70 – 72.99%
D = 60 – 69.99%		
F = < 60%		

Lab Attendance and Conduct:

Experiments missed due to unexcused absences will be counted as a zero. Experiments missed due to excused absences may only be made up with instructor permission. Students are expected to adhere to the Winthrop Student Conduct Code as outlined in the Student Handbook:

<http://www2.winthrop.edu/studentaffairs/handbook/StudentHandbook.pdf>

Withdrawals:

In order to drop CHEM 304, you must also drop CHEM 302. Per Winthrop University policy, any student who wishes to withdraw from the course with a grade of "N" must do so before the Course Withdrawal Deadline (**December 3, 2020**).

Changes to Syllabus:

We reserve the right to update and edit this syllabus as necessary, including assignments, the calendar, and policies. You will be notified immediately of any such changes.

Masking Expectations:

Winthrop requires that all students adhere to safety practices that will minimize the transmission of COVID-19 within the campus community. Accordingly, students are expected to engage in social distancing and wear a cloth facemask while on campus. Failure to comply with this requirement in the classroom will result in dismissal from the current class meeting. Repeated violations will be reported to the Dean of Students as a violation of the Student Conduct Code. Students with conditions that prohibit the wearing of a facemask should discuss this with their instructor and/or contact the Office of Accessibility to arrange appropriate accommodations.

Copyright Notice:

The materials in this course are only for the use of students enrolled and for purposes associated with this course. These materials may not be further disseminated.

Accessibility:

“Winthrop University is committed to providing accessible learning experiences and equal access to education for all students. The syllabus is available in alternate formats upon request.”

“If you are a student with a disability (including mental health concerns, chronic or temporary medical conditions, learning disabilities, etc.) and you anticipate or experience academic barriers due to the condition, please contact The Office of Accessibility (OA) for information on accommodations, registration, and procedures. After receiving approval for accommodations through OA, please make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely manner.”

OA contact information:

Email: accessibility@winthrop.edu

Phone: 803-323-3290

Office: 307 Bancroft Hall Annex

General Lab Order:

- **Only dispose of waste in containers labeled for waste collection** Do not put any chemical waste in the trash, down the drain or in any container not labeled as waste.
- **Replace lids on all containers immediately after use.** Open containers increase everyone's exposure to the substances within them. Spills are also more likely when a container is open. Some reagents can also be ruined by excessive exposure to air.
- Clean your glassware after each experiment.
- Clean up any spills you create. If you don't know how a spill should be cleaned up, ask.
- Put things back where you found them (equipment and anything non-disposable).
- Dispose of broken glass, used pipets and capillaries in the white broken glass containers.
- Leave your lab station clean and organized.

Lab Safety:

- **SAFETY GOGGLES ARE MANDATORY ANY TIME YOU ARE IN THE LAB.** Even if you are simply recording data, safety glasses must be worn. If you are found not wearing safety glasses, you will be asked to leave and will receive a zero for the experiment.
- Wear sensible clothing. Shoes and shirts are required. Long hair should be pulled back. Open-toed shoes and high heels are prohibited. Spills are common; it is best not to wear your good clothes into the lab. Use of a lab coat or lab apron is required.
- Eating, drinking and smoking are prohibited in the labs.
- Report any spills, cuts, burns or breakage of glassware immediately. Accidents happen and they will not affect your grade.
- Report any malfunctioning equipment (Mel Temps, hot plates, etc.).
- Particularly noxious substances should be handled in a fume hood. Make certain the sash is lowered to a safe level, as shown on the side of the hood.
- A safety shower is located in each laboratory in case of a major spill of a hazardous chemical on yourself.
- Each laboratory has an eyewash station to be used if a chemical has come in contact with your eyes. Just place your face between the two fountains and press the lever to activate the water. Try to keep your eyes open as best you can, as this flushes them much more effectively.
- Disposable gloves can be found on the shelves of each laboratory. Wear gloves when dealing with any hazardous chemical. You may even want to wear gloves at all times in the laboratory. If you get a hazardous chemical on your gloves, take them off within a few minutes, wash your hands and put on a fresh pair. Gloves are not impervious; they simply prevent immediate exposure.