

CHEM 304: Organic Chemistry Laboratory

(Sections 001-004)

Fall 2019

Instructor:	Dr. Jay Hanna	Dr. Christian Grattan	Dr. Aaron M. Hartel
Office:	Sims 313B	Sims 301B	Sims 314B
Email:	hannaj@winthrop.edu	grattanc@winthrop.edu	hartela@winthrop.edu
Office Phone:	323-4933	323-4927	323-4942
Office Hours:	MR 1:30 – 3:30 p.m.	MWF 11:00 – 12:00 noon	MW 11:00 – 12:00 noon

Course Website: chem.winthrop.edu

Meeting Times:

Meeting times and locations are posted on Wingspan. The schedule of experiments is posted on the course web page

Required Materials:

Text: Anne B. Padías, *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.

Course Goals: The goals of this one-credit course align with:

University Level Competency #1 – “Winthrop graduates think critically and solve problems” and **University Level Competency #4** – “Winthrop graduates communicate effectively.”

Specifically, the course goals are:

- To help the student to better understand some of the topics covered in CHEM 301/302
- To help the student further develop critical thinking and analytical reasoning skills
- To develop the student’s skills in proper scientific record keeping and technical writing
- To introduce the student to more advanced laboratory techniques and instrumentation
- To develop the student’s awareness of chemical hygiene and requirements for the safe handling, use, and disposal of chemicals

Course Learning Outcomes: After completion of the course, the student will:

- Be able to carry out operations common to an organic chemistry lab
- Be able to keep a well-documented record of laboratory work in a proper lab notebook
- 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.
- Communicate the design, execution, and analysis of data from an experimental procedure in a formal report.
- Understand the hazards associated with chemicals and chemical operations and methods for the mitigation of those hazards.

CHEM 304: Organic Chemistry Laboratory

(Sections 001-004)

Fall 2019

Experiment Handouts: Handouts describing the procedure for each laboratory assignment are posted on the course webpage (chem.winthrop.edu).

Prelab Briefing: Each week in the classroom, there will be a briefing on the experiment to be carried out. Students who are not present for the prelab briefing will receive a zero for that lab report grade.

Laboratory Work: After each prelab briefing, the student will report to their assigned lab station in Sims 104 to carry out the experiment. 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 instructor or the Chemistry Instrumentation Manager (Ms. Pam Jaco, 301B Sims, jacop@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 will be graded on a scale of 50 pts and Reaction Experiments will be 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 and the lab 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⁻ = 80 – 82.99%, B = 83 – 86.99%, B⁺ = 87 – 89.99%

C⁻ = 70 – 72.99%, C = 73 – 76.99, C⁺ = 77 – 79.99%

D = 60 – 69.99%

F = < 60%

Lab Attendance and Conduct: Experiments missed due to excused absences may only be made up with instructor permission. All other missed experiments will be counted as a zero. 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 (**October 18, 2019**).

CHEM 304: Organic Chemistry Laboratory

(Sections 001-004)

Fall 2019

Students with Disabilities: Winthrop University is dedicated to providing access to education. If you have a disability and require specific accommodations to complete this course, contact the Office of Disability Services (ODS) at 803-323-3290. Once you have your official notice of accommodations from the Office of Disability Services, please inform me as early as possible.

Changes to Syllabus: Any changes to the syllabus or schedule will be announced in class.

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 needs to be pulled back. Open-toed shoes and high heels are prohibited. It is best not to wear your good clothes into the lab, since spills are common. 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.