

CHEM 243L-003 Organic Chemistry I Laboratory - Fall 2022

Dr. Edward Brush

- **Course Information:** CHEM-243L-003, Wednesday, 12:20-4:10 PM, DMF 477
- **Where can you find me?** My office is DMF 407
- **How can you schedule a meeting with me?** I have both formal and in-formal office hours. Feel free to stop in and chat about class, careers, research, etc.
 - “Formal” office hours are [by appointment](#) on Monday & Tuesday, 3:30 - 5:00 PM
 - Please use this [e-signup sheet](#) to meet with me during my formal office hours. You will have the option of requesting either an in-person meeting or a Zoom meeting. The Zoom meeting link can be found in Blackboard.
 - You can also use the [e-signup sheet](#) to make an appointment to meet at some other time
 - My door is always “open”. If you are in DMF feel free to stop by at any time
- **Contact info:** ebrush@bridgew.edu; 508-531-2116
- **Course Web page:** <http://webhost.bridgew.edu/ebrush/>

Purpose of this Course. Organic chemistry is a critical course for science majors, especially those considering graduate or professional school, *or for participating in undergraduate research*. Our goals in the CHEM 243 lab are to: (1) understand and apply lab safety practices; (2) be able to locate information; and (3) become *proficient* in the lab techniques, methods, and instrumentation needed to perform research in the lab sciences.

Laboratory Requirements:

- **Lab Goggles.** All lab students are required to use **Visorgogs** or full-coverage safety goggles in all chemistry laboratories. You can purchase **Visorgogs** in the [bookstore](#) for ~\$14, and on [Amazon](#) for ~\$12. The goggles are listed in the book requirements for each chemistry lab course on the Bookstore website.
- **Masks.** You must wear an approved mask that covers your mouth and nose. Blue surgical masks and hand sanitizer are available in the labs. You can find the most recent communications regarding the university’s response to COVID-19 at the BSU [COVID-19 webpage](#).
- **Notebooks and Laptops.** We do not have a paper notebook requirement for CHEM 243/244 labs. All students are encouraged to bring a laptop to lab to use as a resource to help you answer questions. You will also need a laptop for some experimental work. Some lab instructors use electronic notebooks through MS Teams. This will be explained through email correspondence from your lab instructor, and in your first lab meeting. The Maxwell Library Circulation Desk has loaner devices (laptops, Chromebooks, iPads, wireless hotspots, etc.), and your instructor can provide loaner laptops during lab.
- **Attendance:**
 - In-person attendance at lab sessions is required, and a Lab Report Form must be completed and handed-in the same day as the lab.
 - If you are ill, or have tested positive for covid, **DO NOT come to lab!** Contact your lab instructor to discuss what you will need to do to make-up missed lab work.
 - You get to make-up one missed lab for the semester. After that, each missed lab will result in a zero grade for that lab.
 - If a student misses three or more lab sessions or does not submit three or more report forms, an F grade will be assigned for the lab and for the lecture portion of the course.
- **Lab Report Forms.**
 - The lab component will involve students downloading, printing (Blackboard, MS Teams, etc.) and starting a Lab Report Form prior to the lab session. Students should read the pre-lab material, experimental procedure, and have a completed the pre-lab portion of the lab report form **BEFORE** arriving at your lab session.
 - Students are expected to arrive on time and be prepared to engage in the pre-lab recitation. At the discretion of your lab instructor, there may be a pre-lab quiz in the first 10 minutes of the lab session.
 - Your instructor will deduct points if you arrive late or have not completed the pre-lab sections.
 - Lab Report Forms must be completed and turned-in the same day as the lab.

Overview of the Laboratory Period:

- **Recitation Discussion.** Your instructor will review the purpose of the lab, background theory, lab safety, experimental procedures, demonstrate lab techniques, and address student questions.
- **Lab Experiment.** Finding chemical reagents and equipment; setting up and carrying out the experiment; recording your detailed experimental procedure including observations, results and primary data, cleaning up your glassware, equipment, lab bench and balances; answering post lab questions.
- **Lab Report Form.** There will be a lab report form for each experiment available through Blackboard or MS Teams. The lab report form will contain the Experimental Procedure that you conduct each week. You will answer specific questions on each lab report form that must be turned in at the end of lab and will be graded for the lab experiment you conduct each lab session. At the instructor's discretion, you will submit either a paper copy of the report, or an electronic copy.

Grading Policy:

- Your lab grade counts as 15-20% of your lecture course grade. All lab work must be finished on the day of your lab meeting, and each lab will be graded on a 100-point scale.
- Each student will turn in their complete Lab Report Form at the end of each lab session. Most of the Lab Report Forms are structured in the following format:
 - Pre-lab portion that involves you reading over the procedure and reviewing online materials. You will complete a goals statement, table of reagents, lab safety, background and theory related questions.
 - Pre-lab quiz given in the first 10 minutes of the lab.
 - During the recitation period, your lab instructor will go over the lab experiment to explain key safety concerns, sample calculations, new techniques, and review the experiment overall. You will be expected to take notes during this time on your Lab Report Form.
 - The laboratory procedure will be in the lab report form for you to follow. You will fill out the following content in the forms: your detailed experimental procedure, experimental observations, sketches of equipment, data and results tables, sample calculations.
 - You will clean up your glassware, equipment, lab bench and balances.
 - You will answer post lab questions on the lab report form.
- Blatant plagiarism of laboratory work will result in a zero grade to all those involved.

Instructor's Discretion and Communication:

- It is up to your lab instructor's discretion as to how you will be graded. This includes grading on a lab that you start but fail to complete, labs turned in late, assignments for make-up labs, etc. My goal is to ensure that all students are treated in an equitable manner, and this starts with honest, open communication. As long as we are honest and communicate with each other, I am willing to be flexible with the lab requirements.

Academic Integrity:

- Students must adhere to the honor code outlined in the BSU catalogue and perform their own written work on all lab reports. <https://catalog.bridgew.edu/content.php?catoid=15&navoid=1558>. Any incidents of copying another student's work or cutting and pasting answers from the internet will be considered a violation of the BSU Academic Integrity Policy. Your laboratory instructors are interested in your own understanding of the laboratory content. All of your written work on laboratory report forms should be unique and your own contribution. A first offense will result in a zero grade for all parties involved. A second offense will result in a zero grade for the lab component.

CHEM 243 - ORGANIC CHEMISTRY LABORATORY SCHEDULE - Fall 2022

Experiment	Title of Experiment
Lab #1	Check-in; Introduction to the Organic Chemistry Lab
Lab #2	Extraction
Lab #3	Crystallization
Lab #4	Synthesis of Acetaminophen
Lab #5	Molecular Modeling
Lab #6	Thin Layer Chromatography (TLC) for the Analysis of Analgesic Drugs
Lab #7	Separation and Identification of Unknowns from a Mixture (2 weeks)
Lab #8	Stereochemistry of Bromine Addition to Alkenes; Check-out

Lab #	Monday	Tuesday	Wednesday	Thursday
Check-in; Lab #1	12-September	13-September	14-September	15-September
Lab #2	19-September	20-September	21-September	22-September
Lab #3	26-September	27-September	28-September	29-September
Lab #4	3-October	4-October	5-October	6-October
NO LABS	10-October	11-October	12-October	13-October
Lab#5	17-October	18-October	19-October	20-October
Lab #6	24-October	25-October	26-October	27-October
Lab #7 Part I	31-October	1-November	2-November	3-November
NO LABS	7-November	8-November	9-November	10-November
Lab #7 Part II	14-November	15-November	16-November	17-November
NO LABS	21-November	22-November	23-November	24-November
Lab #8	28-November	29-November	30-November	1-December

Learning Outcomes for the Organic Chemistry I & II Laboratory:

Students who successfully complete this course will have demonstrated the ability to:

- enter a laboratory setting prepared for experimental work through the timely completion of reading, worksheets, and lab notebook assignments;
- apply laboratory safety protocols for the safe and proper handling of equipment and chemicals;
- locate information on the hazards of all chemicals they are working with;
- identify appropriate on-line resources to search for and find chemical information;
- record experimental procedures, observations and data clearly and effectively in a laboratory notebook;
- analyze experimental results and use this evidence to construct a sound scientific explanation and draw logical conclusions in a laboratory notebook;
- synthesize organic compounds by applying basic laboratory skills, apparatus and experimental methodologies;
- explain and apply basic lab techniques for the purification of organic compounds;
- explain and apply the basic methods and instrumental techniques used to determine the purity of organic compounds;
- perform basic calculations utilizing reaction stoichiometry and green chemistry metrics to evaluate the efficiency of a synthetic process;
- explain and apply the methods and instrumentation used to identify the structure of organic compounds;
- use basic computational methods to evaluate the relative stability of organic compounds;
- develop a research or problem question and supporting project proposal;
- present experimental work and/or projects in the form of an organized laboratory report where experimental results, reaction mechanisms, and chemical ideas are communicated in writing with the correct use of structures, symbols and vocabulary;
- work effectively as a team with other students in conducting and coordinating laboratory exercises, solving problems, and completing an original project;
- make the connection between laboratory exercises and classroom work on how chemical reactions and mechanisms relate to organic functional groups.