



# Chem 25a: Organic Chemistry I

## Contact Details

Stephanie Murray

Office location: Shapiro Science Center 08B

\*Since summer school is being conducted in a fully remote manner all meetings will occur virtually.

Students should not come to my office.\*

Telephone: (781) 736-2545

Email: [murray@brandeis.edu](mailto:murray@brandeis.edu)

I will make every attempt to answer emails in a timely manner (24-48 hours). However, emails received after 5:00 pm may not be responded to until the following day and emails received on weekends, breaks, and holidays may not be responded to until the next working day. Emails about assignments received on the due date may not receive a response. Please allow a minimum of 24 hours in advance with questions about any assignments. Please use your official Brandeis University email account for all communication in this course.

## Meeting Times

### Lectures

Monday, Tuesday, Wednesday, Thursday 9:00 AM – 11:30 AM EST, See LATTE for Zoom link

### Instructor's Office Hours

Monday, Tuesday, Wednesday, Thursday 11:30 AM – 12:00 PM EST, See LATTE for Zoom link

Appointments at other times may be available. Email Prof. Murray if you need to schedule an appointment. Please note that, since office hours are immediately after Chem 25a, we will be using the same zoom room for Chem 25a and office hours.

### Lecture TA Office Hours

Available on LATTE after first lecture.

## Course Description

### Learning Goals:

Organic chemistry focuses on the properties and reactivity of carbon-based molecules. In this course, we will learn how to identify, synthesize, and explain reactivity of organic molecules. We will also explore applications of organic chemistry outside of the classroom in fields such as medicine, food and nutrition, art, the environment, technology, and many others. The emphasis of this course is on understanding and applying the fundamental concepts rather than memorizing. We will learn and practice critical thinking and problem-solving skills. By the end of the semester, you will have developed not only an understanding of these fundamental chemical processes, but also the skills to apply this understanding



to solve new problems and be able to explain the role of organic chemistry in important real-world applications.

### Teaching/learning strategies

This course will utilize a variety of teaching and learning strategies including but not limited to: Zoom lectures, small-group problem solving sessions, and recommended textbook problems. We will be using a variety of technology to facilitate our remote course this semester. Adjustments to class policies may be made as it becomes necessary due to technology limitations or advances.

Learning organic chemistry requires consistent out of class review and practice to solidify understanding and problem-solving skills. There are many different learning styles, so it is best that you develop an approach to this out of class work that is most productive for you. Some approaches that can be useful in this course include reading the textbook, completing practice problems, creating summaries of class notes, and attending office hours. **It is very important to include problem solving (without relying on answer keys while working through the problem) into your independent study. Only reading the book/notes or memorizing will not be enough for you to do well in this course.**

In this course we will learn how to think and reason like a scientist and that takes practice. Taking organic chemistry in a remote learning environment introduces additional challenges. It is important that you stay on top of the material, review notes and practice problems on a regular basis. Waiting until the day before the exam to study will not be a successful strategy for doing well in this course.

### Prerequisites

A satisfactory grade (C- or better) in Chem 11b or the equivalent.

### Credit Hours:

Success in this four-credit course is based on the expectation that students will spend a minimum of nine hours of study time per week in preparation for class (readings, problem solving, preparation for exams, etc.)

## Course Requirements

### Academic Integrity

Every member of the University community is expected to maintain the highest standards of academic integrity. A student shall not submit work that is falsified or is not the result of the student's own effort. Infringement of academic honesty by a student subjects that student to serious penalties, which may include failure on the assignment, failure in the course, suspension from the University or other sanctions (see section 20 of R&R). Please consult Brandeis University Rights and Responsibilities for all policies and procedures related to academic integrity. Students may be required to submit work to TurnItIn.com software to verify originality. A student who is in doubt regarding standards of academic honesty as they apply to a specific course or assignment should consult the faculty member responsible for that course or assignment before submitting the work. Allegations of alleged academic dishonesty

will be forwarded to the Department of Student Rights and Community Standards. Citation and research assistance can be found at [Brandeis Library Guides - Citing Sources](https://guides.library.brandeis.edu/c.php?g=301723) (<https://guides.library.brandeis.edu/c.php?g=301723>). What is allowed and is not allowed in terms of resources and group work will be clearly stated in this syllabus for each assignment type in this course and will vary amongst assignments. Be sure to thoroughly read this syllabus and all instructions and complete the assignment as intended by the instructor.

### Required Assignments

Lecture & Lecture Problems – Attendance and participation in lecture is a required component of this course. All lectures will be held live over Zoom with the exception of lectures on days of exams. Exams will take up 2 hours of our 2.5-hour class session. If new material needs to be covered on the day of an exam it will be delivered through a pre-recorded lecture that you are expected to watch prior to class the next day. Each lecture will involve small group problem solving. Lecture TAs will help facilitate problem solving during lecture. You will upload your work from each day's problems to Gradescope at the end of each class. This work will be graded for completion, not correctness. However, if your work is entirely wrong or completely off base you will not receive credit. Problems are due by 5 pm on Gradescope after each class. The answer keys will be posted to Gradescope at 5 pm so late work is not accepted. If you are not present in lecture you will lose partial credit (20%) on your daily problems. Your lowest 2 scores will be dropped at the end of the semester.

The table below lists the TAs for this course. Their office hour times and Zoom room links are available on LATTE. While you are encouraged to go to your SSG leader's office hours, you may attend those of another leader if needed.

TA	Email Address
Malavika Nair	malavikanair@brandeis.edu
Emma Black	emmablack@brandeis.edu
Ishaan Bhatia	ishaanbhatia@brandeis.edu

### Quizzes

Quizzes will be held during the time frames listed below. You will have 45 minutes to complete the quiz once you start it. If you have trouble submitting your quiz for any reason, email your answers directly to Prof. Murray at the end of your time allowance.

Quizzes will be administered through Gradescope. You may use your notes, textbook, and static websites to complete the quiz. While the quiz is open, you may not discuss the quiz with any other person (classmate, roommate, sibling, parent, friend, relative, random stranger on the internet, TA, etc.). You may not use any websites in which questions can be asked and/or answered (Chegg, Course hero, Reddit, etc.). You are allowed to use your molecular model kit during the quiz.

**There will be no makeup quizzes.** Missed quizzes due to illness, death in the family, or religious reasons will be dealt with on a case-by-case basis if the situation is communicated to the instructor prior to the



start of the quiz. Documentation of the absence may be requested. Incomplete quizzes that are not properly communicated to the instructor will earn a score of 0.

Quiz 1 – Monday, June 7 (Material from June 1 – June 3)

Quiz 2 – Monday, June 21 (Material from June 14 – June 17)

### Exams

Exams will be held during the time frames listed below. You will have two hours to complete the exam once you start it. If you have trouble submitting your exam for any reason, email your answers directly to Prof. Murray at the end of your time allowance.

Exams will be administered through Gradescope. You may use your notes, textbook, and static websites to complete the assessment. While the exam is open, you may not discuss the exam with any other person (classmate, roommate, sibling, parent, friend, relative, random stranger on the internet, TA, etc.). You may not use any websites in which questions can be asked and/or answered (Chegg, Course hero, Reddit, etc.). You are allowed to use your molecular model kit during the exam.

**There will be no makeup exams.** Missed exams due to illness, death in the family, or religious reasons will be dealt with on a case-by-case basis if the situation is communicated to the instructor prior to the start of the quiz. Documentation of the absence may be requested. Incomplete exams that are not properly communicated to the instructor will earn a score of 0.

Exam 1 – June 14, 9 am (Material from June 1 – June 10)

Exam 2 – June 28, 9 am (Material from June 14 – June 24)

### Final Exam

A cumulative final exam will be administered at 9 am on Thursday, July 1. You will have three hours to complete this exam and it will be administered on Gradescope.

It is possible to raise your score on previous exams by doing well on the final. Material on the final will be grouped based on which part of the semester it is from. Groupings will not explicitly be made on the exam and it is possible that a question may fall into more than one group due to the nature of this course. If your percentage score on a question group on the final is greater than what you earned on that exam, your percentage score from that group of questions will be averaged with your original exam score to create a new exam score that will be used when calculating your final course average. This will only be done if it is in your favor to do so.

As per the summer school website: "Absence from the final examination and the right to take a makeup examination are only permissible for documented medical reasons. If a student is unable to take the final examination because of illness, the student must notify the Summer School office of the illness as

early as possible before the exam and provide appropriate documentation in order to be eligible for a makeup examination.”

## Evaluation

Final grades will reflect your weighted average on the course assignments listed below. Conversions from weighted average to letter grade are also listed below. Percentages will be rounded to the nearest tenth decimal place.

Class Element	Grade Percentage
Daily Problem Sets	10%
Quizzes (2)	20%
Exams (2)	40%
Cumulative Final	30%

Letter Grade	Percentage	Letter Grade	Percentage
A	93.0 – 100.0	C	73.0 – 76.9
A-	90.0 – 92.9	C-	70.0 – 72.9
B+	87.0 – 89.9	D+	67.0 – 69.9
B	83.0 – 86.9	D	63.0 – 66.9
B-	80.0 – 82.9	D-	60.0 – 62.9
C+	77.0 – 79.9	E	0 – 59.9

## Regrades

If you suspect there was an error in grading, you may request a regrade of an exam or quiz within *3 days* of the document being returned. Requests made more than 3 days after the document is returned will not be honored. To request a regrade, please email an explanation of the request to the instructor. When a regrade is requested, the entire document will be regraded and the grade on the assignment may go up, down, or remain the same. The exception to this is if there was an error made in adding up the total score, not in assigning points. In this case, the total points will simply be added up again and corrected.

## Essential Resources

### Accommodations

Brandeis seeks to welcome and include all students. If you are a student who needs accommodations as outlined in an accommodations letter, I want to support you. In order to provide test accommodations, I need the letter more than 48 hours in advance. I want to provide your accommodations, but cannot do so retroactively. If you have questions about documenting a disability of requesting accommodations,



please contact Student Accessibility Support (SAS <https://www.brandeis.edu/accessibility/>) at 781.736.3470 or [access@brandeis.edu](mailto:access@brandeis.edu).

### Course Materials

*Organic Chemistry*, 6<sup>th</sup> ed. By Marc Loudon and Jim Parise, Roberts & Company, 2016. ISBN 978-1-936221-34-9 and accompanying *Study guide and solutions manual*. The textbook is also available on digital course reserve through the library. See the link on LATTE.

Molecular Model Kit: Darling organic and inorganic molecular models ISBN 978-09648837-1-0 (or any other model kit). You can also make your own using things like toothpicks, modeling clay, playdough, duct tape, pipe cleaners, etc. if you cannot buy one. Reach out to your instructor if you want help with this.

If you are having difficulty purchasing course materials, please make an appointment with your Student Financial Services or Academic Services advisor to discuss possible funding options and/or textbook alternatives.

### Required Readings

Textbook sections that match the lecture content are indicated for each day's lecture in the course calendar. Sometimes the textbook goes over things that we do not cover in class. Unless explicitly stated otherwise, if a topic is not covered in the lecture or other assigned class work and is only covered within the suggested textbook reading, it will not be on an assessment.

### Apps or Tools/Equipment

In order to complete work for this course you must have access to the following:

- The internet.
- A webcam either on your laptop, tablet or cell phone. (Please contact instructor if this is an issue.)
- A laptop or tablet capable of accessing and completing tasks in LATTE, Echo360, Zoom, G-Suite, and Gradescope.
- A method of uploading images of handwritten work to LATTE and Gradescope. There are many options for this including a scanner, a digital camera that can connect to your computer/tablet, a scanner app on your phone/tablet, the "Notes" app on an iPhone, etc.
- ChemDraw is not required but is recommended. Please see LATTE for instructions for downloading the program (free to students enrolled in Chem 25/29).

### LATTE

LATTE is the Brandeis learning management system: <http://latte.brandeis.edu>. Login using your UNET ID and password.

### Library

The Brandeis Library collections and staff offer resources and services to support Brandeis students, faculty and staff. These include workshops, consultations, collaboration, materials and instruction on emerging trends in technologies such as machine learning, emerging trends in research such as data visualization, and emerging trends in scholarship such as open access. Librarians at the Circulation Desk, Research Help Desk, Archives & Special Collections, Sound & Image Media Studios, MakerLab, AutomationLab, and Digital Scholarship Lab are available to help you.

<https://www.brandeis.edu/library/about/index.html>

### Privacy

This class requires the use of tools that may disclose your coursework and identity to parties outside the class. To protect your privacy, you may choose to use a pseudonym/alias rather than your name in submitting such work. You must share the pseudonym/ alias with me and any teaching assistants as needed. Alternatively, with prior consultation, you may submit such work directly to me.

### Student Support

Brandeis University is committed to supporting all our students so they can thrive. The following resources are available to help with the many academic and non-academic factors that contribute to student success (finances, health, food supply, housing, mental health counseling, academic advising, physical and social activities, etc.). Please explore the many links on this Support at Brandeis page (<https://www.brandeis.edu/support/undergraduatestudents/browse.html>) to find out more about the resources that Brandeis provides to help you and your classmates to achieve success

### Teaching Continuity

Due to the remote method of instruction used in this course, a switch by the University to fully remote instruction at any point in the semester can be easily accommodated. Due dates for assignments will be reevaluated as necessary in the case of a campus closure or other event that disrupts the class's ability to maintain the originally planned schedule.

The goal for this course is to provide clear and consistent expectations to students. Things may change over the course of the semester that may require us to adapt assignments, due dates, expectations, content delivery, policies, and potentially other aspects of this course. My goal is to be as transparent and honest with you as possible throughout the semester when these changes are necessary. That means I might not always have all the answers all the time, plans might need to change multiple times, and there may be times of uncertainty as we await guidance from the university. I promise to communicate openly and honestly with you throughout this semester. In return, I ask for your patience during times of uncertainty and your willingness to adapt with me. If you ever feel confused or overwhelmed by the expectations of this course, please do not hesitate to contact the instructor.

## Course Plan

The course plan is designed to give you a general idea of what topics will be covered and when. Some topics may take longer while others may take less time, therefore the course plan is subject to change. Changes will be announced in class and on LATTE as needed.

Week-Lecture	Date	Topics
1-1	6/1	Atomic Orbitals, MO Theory, Hybridization
1-2	6/2	Lewis Structures, formal charge, molecular geometry, dipole moments
1-3	6/3	Drawing organic molecules, resonance structures
2-4	6/7	Quiz 1 Alkanes, alkenes, alkynes, degrees of unsaturation
2-5	6/8	Oxygen, sulfur, nitrogen & halogen functional groups
2-6	6/9	Intermolecular interactions, conjugation & hyperconjugation, aromaticity
2-7	6/10	Viewing molecules in 3D, Newman projections
3-8	6/14	Exam 1 Cycloalkane Intro
3-9	6/15	Chair conformations
3-10	6/16	Stereochemistry
3-11	6/17	Intro to arrow pushing, reaction coordinate diagrams, acid base reactions
4-12	6/21	Quiz 2 Acid Base reactions
4-13	6/22	Addition Reactions
4-14	6/23	Addition Reactions
4-15	6/24	Addition Reactions
5-16	6/28	Exam 2 Substitution Reactions
5-17	6/29	Substitution Reactions
5-18	6/30	Substitution Reactions
	7/1	Final Exam