

# General Chemistry Laboratory - Chem18a - Summer 2024

## Instructor

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## Office Hours

MTR 11:30 am-1:00 pm, and by appointment

## Class Meetings

TR 1:00-5:30 pm, Shapiro Science Center, Room 00-09

## Course Description and Learning Goals

This course is an Experiential Learning course in which students will utilize concepts learned in the General Chemistry lecture course. Throughout this course students will be introduced to important basic and advanced chemistry laboratory techniques and they will develop an extensive practical laboratory experience. This experience should provide them with a solid foundation and preparation for future scientific development. Upon successful completion of this course students should be able to demonstrate practical skills of utilizing selective qualitative and quantitative laboratory techniques and procedures. When students encounter any problem during procedural steps they are not provided with fixes and solutions but instead they are helped by questions. Students learn how to use fundamental chemical principles to explain experimental observations and how to interpret data collected from experiments. At the same time students learn how to record observations, how to write a good laboratory report and how to utilize basic statistical methods to evaluate measurements. This laboratory course strongly encourages development of analytical thinking and problem solving skills and engages students both in individual and team projects. Student interactions become an important part of this course and both individual and shared experience helps students to understand and learn basic concepts of chemistry in thoroughly engaging environment.

## Lab sessions

- Each lab period begins with a prelab talk/discussion. Student must join the lab session on time. Any student more than 2 minutes late will be noted. Any late arrival and unexcused absence will affect the student's attendance score (see below).
- This laboratory course is a 2-credit course and it is expected that students spend additionally at least between 3-5 hours per week to prepare for experiments and to work on their laboratory reports.

## Course Grade

### Lab reports

- Lab reports consist of pre-lab assignment (due before the lab starts) and a post-lab report (due at the beginning of next lab period).
- Due to the condensed nature of the summer schedule, reports turned in up to 24 hrs late will receive a 25% deduction, and reports more than 48 hours late will not be accepted.

### Lab session attendance, performance, and notebook

- Attendance at all lab sessions is required. You are expected to arrive on time so the lab sessions can start promptly with the pre-lab at 1:00 pm. ***There will be no laboratory make-ups for missed experiments.***
- Your performance throughout the course will be assessed by your teaching assistants at the end of semester and awarded by up to 4 points. Qualities to be considered include: laboratory skills, precision, accuracy, efficiency of your lab work, problem solving skills, independence, overall improvement, safety precautions, compliance with laboratory rules, etc. Students coming to the lab must be prepared, having thoroughly read the experiment.
- During the prelab talks and during the lab your TA may ask questions to see if you know the goal of each experiment, describe the main procedural steps, what data are going to be collected and how the final results will be obtained.
- There will be two notebook evaluations, one in the middle and one at the end of semester. Your notebook evaluation will focus on how you follow the guidelines for keeping it. All required parts must be included in the notebook, and all printed material must be well attached (taped or glued) in proper places. All material in the notebook must be kept in a legible, clear and organized manner. A detailed table of contents must be presented in the front of notebook and updated weekly.

### Tests

There is one laboratory final exam in the summer session. See course schedule.

### Course grade weights

*Class Element Grade Percentage:*

Lab reports 60%

Final Exam 25%

Lab attendance, performance, and notebook 15%

## Letter- grade equivalences

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

## Course Materials

- You will need a laboratory manual that is available for enrolled students online for no charge (LATTE).
- You will also need anti-fog safety goggles and laboratory notebook. Both items are available at the University's bookstore and should be purchased before the first check-in session. Only anti-fog safety goggles are approved for the general chemistry laboratory.
- Bring to your lab meetings the lab manual, notebook and a scientific calculator. Write your name on all these items.

## LATTE

LATTE (Learning And Teaching Technology Environment) offers tools for course management and allows to post course material online. The LATTE Chem18 course is limited only to students enrolled in the Chem18 course, TAs and the instructor. To access LATTE go to <http://latte.brandeis.edu> and log in using your ID and password.

## Other Information

### Lab session make-ups

There are no make-ups allowed for missed laboratory sessions. Please see your instructor if you have questions.

### Laboratory safety and rule violations

Laboratory safety rules will be strictly enforced. These safety rules will be reviewed during the first week of lab. A student may be asked to leave the laboratory at any time if they are not performing the experiment safely. A student will not be allowed to stay in the lab if not wearing proper clothing or adequate eye protection. In case of severe and/or repeated safety rule violations you may receive a failing grade. Use of cell phones in the lab and during lectures is strictly prohibited. Cell phones are only allowed in the lab when using Duo Mobile to access lab computers. Use of laptops during lectures and lab sessions is allowed for course related matters only.

## Students with disabilities

Brandeis seeks to welcome and include all students. If you are a student who needs accommodations as outlined in an accommodations letter, please talk with me and present your letter of accommodation as soon as you can. In order to provide test accommodations, I need the letter at least 24 hours before the test. I want to provide your accommodations, but cannot do so retroactively. If you have questions about documenting a disability or requesting accommodations, please contact Student Accessibility Support (SAS) at 781.736.3470 or [access@brandeis.edu](mailto:access@brandeis.edu)

## Academic Integrity

You may discuss an experiment with other students, but you must write your own lab report in your own words. Calculations, graphs, sketches, drawings etc. should be done as individual tasks. A report that is not clearly the student's own work will lead to charges of academic dishonesty, which are referred to the University's judicial system. You are expected to be familiar with and to follow the [University's policies on academic integrity](#). Any suspected instances of alleged dishonesty will be reported to the Office of Student Development and Conduct and may result in sanctions including but not limited to failure in the course, failure on the assignment in question, suspension from the University and/or educational programs.

## Academic coursework and religious observance

Brandeis is a university that embraces students of a wide diversity of religious traditions. Students should review their syllabus at the beginning of each term to determine if there are any conflicts between class time and religious observance. It is the student's responsibility to inform the instructor of these conflicts within the first two weeks of the semester. Missing a class due to travel plans associated with a particular holiday does not constitute an excused absence.

## Preparation for laboratory experiments

Attend lab lectures and read carefully the entire text on the experiment you are going to perform. Also read any assigned readings. Complete the prelab assignment problems before you come to the lab. Starting Lab 2, you must upload solutions to the prelab problems on GRADESCOPE and paste the copy of it in your notebook before the start of the lab. There is no prelab assignment for the first lab. In your notebook enter experiment number with the title and glue, tape or reproduce a printout of a Data Table form (posted on LATTE) on the same page. During the lab you will enter an outline of the experimental procedure in your notebook on the left half of a new page and your observations on the right half, next to the outline. Bring to your lab meetings printed full procedure from the lab manual, notebook and a scientific calculator. Write your name on all these items.

## Laboratory Schedule

	Mon	Tues	Wed	Thurs	Fri
June	3	<b>4</b> <u>Experiment 1</u> <i>Density of Water</i>	5	<b>6</b> <u>Experiment 2</u> <i>Percent Sugar in a Beverage</i>	7
	10	<b>11</b> <u>Experiment 3</u> <i>Periodic Table</i>	12	13	<b>14</b> <u>Experiment 4</u> <i>Stoichiometry</i>
	17	<b>18</b> <u>Experiment 5</u> <i>Redox Titration</i> <b>Notebook Check 1</b>	19	<b>20</b> <u>Experiment 6</u> <i>Thermochemistry</i>	21
	24	<b>25</b> <u>Experiment 7</u> <i>Density and Boiling Point</i>	26	<b>27</b> <u>Experiment 8</u> <i>GC and IR Spectroscopy</i>	28
July	1	<b>2</b> <u>Experiment 9</u> <i>Visible Spectroscopy</i> <b>Notebook Check 2</b>	3	<b>4</b>	<b>5</b> <b><u>Final Exam</u></b> <b><u>9 am</u></b>