CHEM-UA.125
General Chemistry I Laboratory

Instructor Information
- Prof. Stephanie Geggier (instructor of record)
- Zoom Office hours: Monday & Tuesday 1-2 pm ET, Thursday 8-9 am ET or by appointment (Zoom Meeting ID stephanie.geggier)
- geggier@nyu.edu
- Every laboratory section is taught by a section instructor. There are 50 laboratory sections taught by 33 instructors. As a team we will teach you chemistry!

Course Information
- Welcome to the General Chemistry I laboratory! The objective of this course is to become proficient in techniques used by chemists, to carry out experiments safely and carefully, to obtain data and to analyze data correctly. You will learn basic laboratory skills and techniques such as using balances, volumetric measurements, preparing solutions, titration, fractional crystallization, calorimetry, colorimetry and so on. In addition, you will learn how to analyze data using software such as Logger Pro and Microsoft Excel and construct and study molecules with Spartan Student. Many of the experiments are scheduled to follow the topics of the lecture portion of the course. Try to see the connections between the two. Laboratory work will help you to understand the material covered.
- Because laboratory work is worth only 25% of the chemistry grade, a common misconception of chemistry students is that laboratories should be easier and require less work than the lecture. This is not necessarily true. The laboratory is the place where you do chemistry. Conducting experiments and drawing correct conclusions from data requires you to be familiar with the procedure, techniques, and safety hazards, know the underlying scientific principles and be able to apply them. For any chemistry laboratory course, you will need to budget extra time for pre-laboratory and post-laboratory work. Without proper preparation you will not only present a safety hazard in the laboratory but also not meet the learning goals.
- Laboratories will be held in room 151 Brown and via Zoom (find the link in the Zoom section on NYU Classes).

Course Requirements

Laboratories
In order to reduce the density in the teaching laboratory, each week only half of the class will meet in the laboratory to conduct experiments (called wet labs). The other half of the class will meet via Zoom to work collaboratively on exercises involving simulations, videos, and virtual lab
environments (called **dry labs**). Please check the schedule below to see on which days you meet your section in the laboratory and on which days you meet your section via Zoom. Online students will always meet via Zoom, write reports for wet labs based on videos and data collected by instructors and complete virtual labs to practice laboratory skills.

Each laboratory session (in the lab or on Zoom) will begin with a pre-lab talk by the section instructor.

In the teaching laboratory, students are required to wear personal protective equipment (PPE) against chemical splashes and COVID-19 for the duration of the laboratory. Because of the lower comfort, we will reduce the laboratory time to three hours. These three hours should be used to conduct the experiment and discuss the data with your instructor. Reports should be completed at home. Morning sections should leave the laboratory by 12:30 pm; afternoon sections should leave the laboratory by 5:30 pm. It is essential that you come to the laboratory well prepared, so you can finish the experiment early and leave on time.

**Lectures**

Laboratory lectures will be pre-recorded and uploaded to Classes in the section Laboratories. Lectures must be viewed prior to class. Failure to do so will result in point deductions.

**Laboratory Reports**

After completing laboratory work, you will have to prepare a report. Specific requirements for each laboratory are given in the manuals. Laboratories are designed in such a way that the reports can be completed during class time. However, in order to give more flexibility during this crisis, reports are due 24 hours after the end of the class session. It is still recommended to submit them by the end of class. Reports must be submitted to Gradescope. Please see “How to use Gradescope - Student guide”. The lowest laboratory report score will be dropped.

**Notebook Preparation**

For each wet lab, all students must prepare their laboratory notebook and submit the respective pages to Gradescope prior to class (see “Notebook Guidelines”). For uniformity and fairness, online students must submit their notebook as well.

**Quizzes**

- **Pre-lab quizzes** are taken online on NYU Classes (Tests & Quizzes tab) and are due on Sundays before lab at 11:55 pm. You will have two hours to complete the Pre-lab quiz once you have started (if you start after 9:55 pm you will have less time). It cannot be paused once you have begun. You will have one attempt at the assignment, so be prepared before starting. Never wait until Sunday night to take this quiz. If you encounter any technical problems, you may not be able to complete the quiz and lose points. Because it can happen for various reasons that you miss a quiz, your lowest pre-lab quiz score will be dropped. Therefore, if you miss a quiz, **DO NOT** ask your instructor for an extension but consider the missed quiz as the one that will be dropped.

- The **Safety Quiz** is also taken on NYU Classes. Watch the ACS safety video (https://www.youtube.com/watch?v=0zHev9iM8kU) and read the safety manual prior to attempting this quiz. You must get at least 80% correct but you can take the test as many
times as you like until you get 100% up until the deadline. This grade is recorded as a pre-lab quiz grade.

- The Nomenclature Quiz must be taken on NYU Classes after completing the Nomenclature dry-lab exercises. You will have 2 attempts for this assignment.
- The final exam is a written exam and will be administered online.

LearnSmart Labs

LearnSmart Labs are experiments conducted in a virtual lab environment on the Connect platform. The link to the platform will be distributed in the first week of class. Note that this is a different link than for the lecture. Please watch the Student Overview video to become familiar with LearnSmart Labs (http://video.mhhe.com/watch/egsJBj7VGIl9Eb8WpMdCR?).

Grading of Assignments

Your overall laboratory score will contribute to 25% of your overall general chemistry course grade. The grade for this course will be determined according to the following formula:

<table>
<thead>
<tr>
<th>Assignments</th>
<th>% of Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Lab Quizzes (incl. lab safety quiz)</td>
<td>10%</td>
</tr>
<tr>
<td>Lab Reports (incl. notebooks)</td>
<td>50%</td>
</tr>
<tr>
<td>LearnSmart Labs &amp; Nomenclature Quiz</td>
<td>15%</td>
</tr>
<tr>
<td>Laboratory Final Exam</td>
<td>25%</td>
</tr>
</tbody>
</table>

View Grades

You will be able to access your grade for a quiz in the gradebook on NYU Classes right after completion. Feedback will be available on Mondays at 12:05 am. You will also be able to see the grades for the notebooks and lab reports as they are recorded on Gradescope and in the gradebook on Classes. It is your responsibility to make sure that the grades recorded on Classes are correct and consistent with your grades on Gradescope.

Course Correspondence

If you have questions regarding graded lab reports, pre-lab assignments, and upcoming labs, or any other concerns pertinent to the course, first email your section instructor. If you do not receive a response, or if your section instructor is unable to resolve the issue, please contact Prof. Geggier directly. The following information must be included in email: Name and section number.
## Course Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Odd-Numbered Blended Sections ‡</th>
<th>Even-Numbered Blended Sections ‡</th>
<th>Online Sections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sep 2 (W), 8 (T), 9 (M*), 10 (R)</td>
<td>CHECK-IN, Laboratory Safety, and Notebook Preparation (D)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sep 14-17</td>
<td>Data Analysis (D)</td>
<td>Density of Liquids and Solids (W)</td>
<td>Data Analysis</td>
</tr>
<tr>
<td>Sep 21-24</td>
<td>Density of Liquids and Solids (W)</td>
<td>Data Analysis (D)</td>
<td>Density of Liquids and Solids</td>
</tr>
<tr>
<td>Sep 28-Oct 1</td>
<td>Nomenclature (D)</td>
<td>Fractional Crystallization (W)</td>
<td>Nomenclature</td>
</tr>
<tr>
<td>Oct 5-8</td>
<td>Fractional Crystallization (W)</td>
<td>Nomenclature (D)</td>
<td>Fractional Crystallization</td>
</tr>
<tr>
<td>Oct 12-15</td>
<td>Acid/ Base Stoichiometry LearnSmart Lab (D)</td>
<td>Back-Titration (W)</td>
<td>Acid/ Base Stoichiometry LearnSmart Lab</td>
</tr>
<tr>
<td>Oct 19-22</td>
<td>Back-Titration (W)</td>
<td>Acid/ Base Stoichiometry LearnSmart Lab (D)</td>
<td>Back-Titration</td>
</tr>
<tr>
<td>Oct 26-29</td>
<td>Reactions in Solution &amp; Qualitative Analysis LearnSmart Labs (D)</td>
<td>Determining the Ideal Gas Constant (W)</td>
<td>Reactions in Solution &amp; Qualitative Analysis LearnSmart Labs</td>
</tr>
<tr>
<td>Nov 2-5</td>
<td>Determining the Ideal Gas Constant (W)</td>
<td>Reactions in Solution &amp; Qualitative Analysis LearnSmart Labs (D)</td>
<td>Determining the Ideal Gas Constant</td>
</tr>
<tr>
<td>Nov 9-12</td>
<td>Periodic Trends (D)</td>
<td>Calorimetry (W)</td>
<td>Calorimetry</td>
</tr>
<tr>
<td>Nov 16-19</td>
<td>Calorimetry (W)</td>
<td>Periodic Trends (D)</td>
<td>Periodic Trends</td>
</tr>
<tr>
<td>Nov 23-26</td>
<td>No class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nov 30-Dec 3</td>
<td>Molecular Modeling with Spartan (D)</td>
<td>Beer’s Law (W)</td>
<td>Molecular Modeling with Spartan</td>
</tr>
<tr>
<td>Dec 7-10</td>
<td>Beer’s Law (W)</td>
<td>Molecular Modeling with Spartan (D)</td>
<td>Beer’s Law</td>
</tr>
<tr>
<td>TBA</td>
<td>Final Exam (online)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D = Dry lab via Zoom  
W = Wet lab in **151 Brown**

* September 9 is a legislative day with classes meeting according to a Monday schedule

‡ If we have to shift to fully remote instruction, the entire class will follow the schedule for the online sections.
### Assignments for Each Laboratory

<table>
<thead>
<tr>
<th>Laboratory</th>
<th>Assignment Due</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CHECK-IN, Laboratory Safety, Notebook Preparation (D)</strong></td>
<td>Read the Lab Safety Manual, view the ACS safety video, Lab Safety quiz due after class</td>
</tr>
<tr>
<td>Data Analysis (D)</td>
<td>Pre-Lab Quiz, Lab Report</td>
</tr>
<tr>
<td>Density of Liquids and Solids (W)</td>
<td>Pre-Lab Quiz, Notebook, LearnSmart Lab (Lab Skills), Lab Report, <em>(online students only): Density LearnSmart Lab</em></td>
</tr>
<tr>
<td>Nomenclature (D)</td>
<td>Nomenclature quiz due after class</td>
</tr>
<tr>
<td>Fractional Crystallization (W)</td>
<td>Pre-Lab Quiz, Notebook, Lab Report, <em>(online students only): Stoichiometry LearnSmart Lab</em></td>
</tr>
<tr>
<td>Acid/ Base Stoichiometry LearnSmart Lab (D)</td>
<td>LearnSmart Lab (Acid/ Base Stoichiometry), LearnSmart Lab (Lab Skills) should be done before Back-Titrations or Acid/Base Stoichiometry (whichever comes first)</td>
</tr>
<tr>
<td>Back-Titrations (W)</td>
<td>Pre-Lab Quiz, Notebook, Lab Report, LearnSmart Lab (Lab Skills) should be done before Back-Titrations or Acid/Base Stoichiometry (whichever comes first)</td>
</tr>
<tr>
<td>Qualitative Analysis &amp; Reactions in Solution LearnSmart Labs (D)</td>
<td>LearnSmart Labs (Qualitative Analysis and Reactions in Solution)</td>
</tr>
<tr>
<td>Determining the Ideal Gas Constant (W)</td>
<td>Pre-Lab Quiz, Notebook, Lab Report, <em>(online students only): Gas Law LearnSmart Lab</em></td>
</tr>
<tr>
<td>Calorimetry (W)</td>
<td>Pre-Lab Quiz, Notebook, Lab Report, <em>(online students only): Calorimetry LearnSmart Lab</em></td>
</tr>
<tr>
<td>Periodic Trends (D)</td>
<td>Pre-Lab Quiz, Lab Report</td>
</tr>
<tr>
<td>Molecular Modeling with Spartan (D)</td>
<td>Lab Report</td>
</tr>
<tr>
<td>Beer's Law (W)</td>
<td>Pre-Lab Quiz, Notebook, LearnSmart Lab (Lab Skills), Lab Report, <em>(online students only): Spectrophotometry Fundamentals LearnSmart Lab</em></td>
</tr>
</tbody>
</table>

- **Lab Manuals:** Posted on Classes, section Resources / Laboratory
- **Pre-Lab Quiz:** Taken on Classes, due Sunday 11:55 pm ET
- **Lab Report:** Uploaded to Gradescope, due 24 hours after class
- **Notebook:** Uploaded to Gradescope, due 1 hour before class
- **LearnSmart Labs:** Taken on Connect platform prior to class for wet labs and during class time for dry labs
Course Materials

Required Materials

- Laboratory Notebook (available at the NYU bookstore for $13.50): Student Lab Notebook, General Chemistry, 100 Carbonless Duplicate Sets, Hayden McNeil.
- In-person students only: PPE must be purchased in the chemistry stockroom using NYU CAMPUS CASH only.
  - 6 disposable lab coats ($9)
  - Full coverage safety goggles with indirect ventilation ($5)
  - 1 box of disposable nitrile gloves ($8)
- Software:
  - Logger Pro©: available for free download (instructions on NYU Classes site in Resources/Laboratory Materials/Other Resources)
  - Microsoft Word and Microsoft Excel: Go to https://www.microsoft.com/en-us/education/products/office and enter your NYU email address to obtain a free copy of Office 365.
  - Zoom will download automatically when you join your first Zoom meeting

Resources

- Access your course materials: NYU Classes (nyu.edu/its/classes), Gen Chem I – Fall 2020, Laboratories section, for download: Resources section, Laboratory folder
- Upload laboratory reports: Gradescope, access via link in Laboratories section on Classes course site
- Access the virtual labs (LearnSmart Labs): McGraw-Hill Connect platform, link will be distributed in first week of class.
- Obtain 24/7 technology assistance: IT Help Desk (nyu.edu/it/servicedesk)

Course Policies

Laboratory Safety & Policies

Safety is of paramount importance in the laboratory. If you do not follow the safety rules presented to you, you will be removed from the lab and you will lose credit for the experiment.

1) PPE and Attire

- Goggles are required in the laboratory at all times, even when you are not directly handling chemicals.
- Gloves must be used when handling chemicals and equipment within the laboratory. You will need multiple pairs per session. When removing gloves, do so in a way that avoids the contaminated exterior contacting the skin. Wash hands after removing gloves. Dispose of contaminated gloves in the container for broken glass. Do not attempt to re-use disposable gloves. Never wear possibly contaminated gloves outside of the laboratory or to handle telephones, computer keyboards, etc. Latex gloves are not permitted.
- Laboratory coats are required in the laboratory and must be disposed of in the regular trash prior to leaving the lab space.
• Clothing that covers your legs and shoulders are required for this course. This does not include tights or ripped jeans. Skin between your pants and shoes should not be exposed. No shorts or short skirts and no exposed bellies. Closed shoes must be worn at all times. No ballet flats, flip flops, or open shoes of any kind are permitted. If you come to lab improperly dressed, you will be sent home.

2) Clothing Lockers
Personal belongings are not permitted in the lab. Coats, book bags, purses, etc., will have to be placed in a hall locker. These lockers are located on the 4th floor of the Silver building. How to use the clothing lockers…
   a. Go to any locker on the 4th floor.
   b. Place your items inside and close the door.
   c. On the keypad press C, then any 4 number combination you will remember, then the key (lock button). The lock will engage. Take a picture of your locker as a record.
   d. To open the locker, simply repeat the earlier steps – Press C, then the same 4 number combination that you entered earlier, followed by the key (lock button). The lock will release. After you have removed your items, please leave the locker as it is, you do not need to re-engage the lock.
   e. Please note that once the lock engages it will only remain locked for 5 hours. You must return as soon as possible following your lab and reclaim your belongings. After 5 hours have passed, the lock will disengage automatically, and the contents will be accessible to anyone. Items left in a locker past their removal time are subject to removal and disposal.
   f. If your locker does not open, the stockroom staff will be able to help you open your locker if you can prove it’s your locker (take a picture). Otherwise you will have to wait until the locker opens automatically after 5 hours.

3) Waste Minimization
In an effort to minimize costs and to reduce any environmental damage, we all will make a concerted effort to avoid wasting laboratory materials and to dispose of all chemicals and other materials properly. With this in mind, you must observe the following rules in the lab:
   a. When you obtain a reagent for use in an experiment, read the label on the bottle; make sure that the substance name, its chemical formula, and its concentration match those specified in the directions for the experiment.
   b. Take only the amount that you need, and DO NOT RETURN any reagent to the bottle.
   c. Dispose of all materials in the proper waste container. DISPOSABLE PIPETS, WEIGHING BOATS, USED NITRILE GLOVES and (of course) BROKEN GLASS MUST be disposed of in the "Broken Glass" container (not the regular trash). Liquid chemical waste must be disposed of into the hazardous or the non-hazardous waste container. There are solid waste containers for solid waste. Used paper towels and used lab coats go into the regular trash. Further details for each experiment are given in the section “Waste Disposal” in the manual.

4) Laboratory Policies
   a. You may not consume food, gum, or beverage in the laboratory.
   b. Cell phone usage is not allowed in the laboratory.
c. Communal laboratory glassware, balances, and equipment must be returned and properly cleaned prior to the end of the lab session.

**Attendance and Tardiness**

Depending on your class time, you should arrive in the laboratory (or on Zoom) by 9:30 am (morning sections) or 2:30 pm (afternoon sections). If you arrive after 10 am (or 3 pm), you will not have enough time to complete the laboratory. Therefore, you will not be allowed to start the experiment and receive a grade of zero for the laboratory report. Points will be deducted for repeated lateness. To receive a passing laboratory grade, you are required to **complete 9 out of 12 labs. THERE WILL BE NO MAKEUP LABS.** You will receive a score of zero for all missed quizzes and laboratory sessions. If you are too ill to attend lab, see a doctor or go to NYU Health Services. You are required to provide documentation that will verify your illness. The documentation must be on a physician's stationary. Excused laboratories will not count when we evaluate your grade. Similarly, if you must miss a lab because of religious observance, you should provide some documentation to be excused. Missed pre-lab quizzes will not be excused but can be made up if documentation is provided. **THERE WILL BE NO EXCEPTIONS TO THESE RULES.**

You must attach a **DOCUMENTATION COVER SHEET** to your documentation (downloadable from our NYU Classes site). Please email your documentation and the documentation cover sheet to Prof. Geggier.

**Academic Honesty/Plagiarism**

All students are required to comply with the NYU Academic Integrity policies and the Honor Code, which can be found at:

http://cas.nyu.edu/page/academicintegrity

http://cas.nyu.edu/page/honorcode

Plagiarism is to use someone else's ideas, words, or figures as your own. That means that you cannot use current or old lab reports, data, figures (such as chemical structures), etc. from your lab partner, friend, textbook, the Internet, or anyone other than yourself. You will do experimental work together with your lab partner and may discuss concepts and ideas with each other. However, work submitted must be original and authentic. Copying post-lab answers is considered cheating. If your section instructor recognizes plagiarism, you will receive a zero for the assignment, and the instance will be reported to the dean’s office. This score will not be eligible as a dropped lab score for calculation of the final grade.

**Disability Disclosure Statement**

Academic accommodations are available for students with disabilities. Please contact the Moses Center for Students with Disabilities (212-998-4980 or mosescsd@nyu.edu) for further information. Students who are requesting academic accommodations are advised to reach out to the Moses Center as early as possible in the semester for assistance.