Course Information

- Welcome to the General Chemistry II 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 utilize techniques learned and skills acquired in General Chemistry I and learn new techniques, such as pH measurements, spectrophotometry, kinetic methods, buffer preparation, constructing voltaic cells and so on. 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. Lab 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.

Labs will be held in room 151 Brown with the exception of the “dry labs” (experiments 3 & 9) that will be held via Zoom.

Prerequisites: CHEM-UA 125 or (CHEM-UA 101 and 103) or CHEM-UA 127 or CHEM-UA 109 and CHEM-UA 111) with a minimum grade of C.

Course Requirements

Lectures

Laboratory lectures will be pre-recorded and uploaded to the course site. Lectures must be viewed prior to class.

Lab Notebook Preparation

For each wet lab, all students must prepare their laboratory notebook and submit the respective pages to Gradescope by 11:55 pm the night before lab (see “Notebook Guidelines”). Notebooks will be checked before the lab sessions. Students who have not submitted their notebooks on time will not be allowed to stay in the lab and complete the experiment.

Laboratories

Each laboratory session will begin with a 5-min quiz followed by a pre-lab talk of the section instructor. It is essential that you come to the laboratory well prepared, so you can finish the experiment early and leave on time.

Laboratory Reports

At the end of each lab, all students are required to hand in a lab report. For numerical questions, work must be shown to receive credit, even if the question does not specifically ask for work. Lab reports usually consist of data sheets and the post-lab. Specific requirements for each laboratory are given in the manuals (= pdfs posted on the course site). Lab partners are allowed to discuss data, results and post-lab questions but may not copy from each other (see section “Academic Honesty/Plagiarism”).

Exams & Quizzes

- Lab Safety Training is taken online on the course site and includes 5 short safety videos and a 41-question test. You must answer at least 80% of the questions correctly, but you can retake the training as many times as you like until you reach 100% by the deadline.
This grade will be recorded as a full lab grade, giving you a good start to your lab experience. Completion of the training is a requirement for working in the gen chem lab.

- **Pre-Lab Quizzes** are taken online on the course site and are due the night 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. Complete quizzes early. If you encounter any technical problems, you may not be able to complete the quiz and lose points.
- **5-min Lab Quizzes** are given at the beginning of every lab session at 9:30 am and 2:30 pm, respectively. There are no make-up quizzes. If you arrive after 9:35 am (or 2:35 pm), you will get a grade of zero for the missed quiz.
- The **Laboratory Final Exam** is a written exam that will be administered in a classroom (location will be announced the week before the exam).

### 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>Online Pre-Lab Quizzes</td>
<td>10%</td>
</tr>
<tr>
<td>5-min Lab Quizzes</td>
<td>5%</td>
</tr>
<tr>
<td>Labs (incl. notebooks and safety training)</td>
<td>60%</td>
</tr>
<tr>
<td>Laboratory Final Exam</td>
<td>25%</td>
</tr>
</tbody>
</table>

For students registered for **CHEM-UA 104**, the lab-only course for transfer students, the following grade scheme applies: A = 93 – 100%, A- = 90 – 92%, B+ = 87 – 89%, B = 84 – 86 %, B- = 80 – 83%, C+ = 77 – 79%, C = 74 – 76%, C- = 70 – 73%, D+ = 67 – 69%, D = 65 – 66%, F = below 65%. For **CHEM-UA 126** students, the grade scheme can be found in the lecture syllabus.

### View Grades

You will be able to access your grade for a quiz on the course site under “Grades” right after completion. Feedback will be available on the day after the whole class completed the quiz. You will also be able to see the grades for the lab reports and lab quizzes as they are recorded. It is your responsibility to make sure the grades recorded on the course site are correct and consistent with the graded lab reports and quizzes returned to you.

### Course Correspondence

If you have any questions, [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. The following information must be included in email: **Name and section number**.
## Course Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Exp. #</th>
<th>Topic</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 24 – 27</td>
<td></td>
<td>Check-In &amp; Lab Safety</td>
<td>Lab Safety Training</td>
</tr>
<tr>
<td>Jan 31 – Feb 3</td>
<td>1</td>
<td>Basic Laboratory Techniques—A Review</td>
<td>Pre-Lab Quiz (video quiz), Notebook, Lab Report</td>
</tr>
<tr>
<td>Feb 7 – 10</td>
<td>2</td>
<td>Colorimetric Analysis of Aspirin</td>
<td>Notebook, Pre-Lab Quiz, Lab Report</td>
</tr>
<tr>
<td>Feb 14 – 17</td>
<td>3</td>
<td>Chemical Bonding (&quot;dry lab&quot; via Zoom)</td>
<td>Pre-Lab Quiz, Lab Report</td>
</tr>
<tr>
<td>Feb 21 – 24</td>
<td></td>
<td><em>No Class (President's Day)</em></td>
<td></td>
</tr>
<tr>
<td>Feb 28 – Mar 3</td>
<td>4</td>
<td>Water Softening</td>
<td>Notebook, Pre-Lab Quiz, Lab Report</td>
</tr>
<tr>
<td>Mar 7 – 10</td>
<td>5</td>
<td>Iodine Clock Reaction Part A</td>
<td>Notebook, Pre-Lab Quiz, Lab Report</td>
</tr>
<tr>
<td>Mar 14 – 17</td>
<td></td>
<td><em>No Class (Spring Break)</em></td>
<td></td>
</tr>
<tr>
<td>Mar 21 – 24</td>
<td>6</td>
<td>Iodine Clock Reaction Part B</td>
<td>Notebook, Pre-Lab Quiz, Lab Report</td>
</tr>
<tr>
<td>Mar 28 – 31</td>
<td>7</td>
<td>Le Châtelier's Principle</td>
<td>Notebook, Pre-Lab Quiz, Lab Report</td>
</tr>
<tr>
<td>Apr 4, 5, 13, 14</td>
<td>8</td>
<td>Determining the Acid-Ionization Constant of Bromophenol Blue</td>
<td>Notebook, Pre-Lab Quiz, Lab Report</td>
</tr>
<tr>
<td>Apr 6, 7, 11, 12</td>
<td>9</td>
<td>Acid-Base Titrations (&quot;dry lab&quot; via Zoom)</td>
<td>Pre-Lab Quiz, Lab Report</td>
</tr>
<tr>
<td>Apr 18 – 21</td>
<td>10</td>
<td>Buffered Solutions</td>
<td>Notebook, Pre-Lab Quiz, Lab Report</td>
</tr>
<tr>
<td>Apr 25 – 28</td>
<td>11</td>
<td>Gravimetric Analysis of Bismuth in Pepto-Bismol Tablets</td>
<td>Notebook, Pre-Lab Quiz, Lab Report</td>
</tr>
<tr>
<td>May 2 – 5</td>
<td>12</td>
<td>Electrochemistry &amp; Check-Out**</td>
<td>Notebook, Pre-Lab Quiz, Lab Report</td>
</tr>
<tr>
<td>May 11</td>
<td></td>
<td>Final Exam, 8:00 – 9:50 am</td>
<td>Location TBA</td>
</tr>
</tbody>
</table>

** If you don’t check out, you will get an “Incomplete”.
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. You may use your lab notebook from General Chemistry I until it is full.
- PPE must be purchased in the chemistry stockroom using NYU CAMPUS CASH only. To make a deposit to your campus cash account go to [https://www.nyu.edu/life/campus-resources/nyu-card-and-campus-cash/campus-cash.html](https://www.nyu.edu/life/campus-resources/nyu-card-and-campus-cash/campus-cash.html) and scroll to the bottom of the page. Click on campus cash on-line, then Campus Cash and Add Value to Campus Cash.
  - 10 disposable lab coats ($15)
  - Full coverage safety goggles with indirect ventilation (TR industrial $5.50 or UVEX Stealth OTG $13.70). The UVEX goggles are more comfortable and fog up less when worn in combination with a mask. They are recommended for people who wear glasses and those who always struggle with fogging goggles.
  - 1 box of disposable nitrile gloves ($8)
- Software:
  - Logger Pro© or Vernier Graphical Analysis: available for free download (instructions available on course site in Laboratories, Check-In)
  - Zoom will download automatically when you join your first Zoom meeting

Resources

- Access your course materials: NYU Brightspace (brightspace.nyu.edu), Gen Chem II, Spring 2022, Contents tab, Laboratories section
- 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. We often learn how to be safe from past mistakes and incidents. We can learn a lot from experience, but if you learn safety by making a lot of your own mistakes, you may not survive long! Most of us don't want to experience fires, explosions, or other dangerous incidents ourselves. Instead, we should learn safety guidelines that have evolved from the adverse experiences of others. Therefore, at the beginning of this semester you will have to complete a Lab Safety Training (found on the course site) which is based on materials from the American Chemical Society (ACS). While in college, you should receive a thorough safety education that is more than just memorizing a few safety rules. Rather, safety education focuses on building the mind, thought processes, critical thinking, reasoning behind safety rules, and developing a strong safety ethic. We encourage you to embrace the safety ethic: value safety, work safely, prevent at-risk behavior, promote safety, and accept responsibility for safety. Why do you need a strong safety ethic and safety education? People with
weak safety ethics put themselves and others at higher risk and are more likely to hurt themselves or others.

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 phones, computer keyboards, etc. Latex gloves are not permitted.
   - **Disposable 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, shoulders, midriff and back 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.
   - You must wear one of these masks: disposable, KN95, KF94, or N95 mask (NYU Mask Guidelines). Cloth masks are not permitted. Your mask must cover your nose and mouth, fit snugly against the sides of your face, and not have air gaps around the edges. Press the nose wire with both index fingers from the middle to the side to close the leaks between mask and face. If your goggles fog up, you can use cloth tape to close the leaks and apply anti-fog wipes to the goggles. Cloth tape and anti-fog wipes will be provided in the lab. Ask your instructor how to use the cloth tape.

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 liquid waste containers. 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 beverages 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 by 9:30 am (morning sections) or 2:30 pm (afternoon sections). A short quiz will be given from 9:30 to 9:35 am and 2:30 to 2:35 pm, respectively. If you arrive later, you will not be able to make up the quiz and receive a grade of zero for it. If you arrive after 9:50 am (or 2:50 pm), you will **NOT BE ALLOWED to start the experiment** and receive a grade of zero for the lab report. Being tardy is disrespectful. When you are always late, you show others (your lab partner, your instructor, etc.) that you don’t value their time and that other things are more important to you than they are.

Lab reports for missed lab sessions will not be accepted.

To receive a passing laboratory grade, you are required to **complete 9 out of 12 labs** and the final exam. In other words, if you miss 4 or more labs, you will receive an “Incomplete”. **THERE WILL BE NO MAKEUP LABS.** You will receive a score of zero for all missed quizzes and laboratory sessions.

University policy for the 2021-22 academic year: Symptoms of COVID-19 can be similar to those of other respiratory infections; testing is often the only way to determine the presence of COVID-19 and the need for prompt isolation. If you fall ill, please do not come to class and report your symptoms to the NYU COVID-19 Prevention & Response Team. Should you need to stay home due to feeling ill, we are not permitted to ask if the absence is COVID-19 related or ask for documentation of a healthcare visit or “doctor’s note” to excuse the absence.

Therefore, we will not collect documentation for absences due to illness. Before the final lab grade is calculated, the lowest 3 lab and pre-lab scores will be dropped (the course site won’t reflect this). However, do not consider this policy a free pass to miss 3 labs for trivial reasons. You should
not miss lab unless you are too ill to attend. Remember that you will be tested on the content of
the lab on the final exam and that a missed experiment or assignment is unlikely to have a positive
impact on your exam grade and future performance in a lab.
If you must miss a lab because of religious observance, please see Prof. Geggier during office
hours.

**Academic Honesty/Plagiarism**

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

https://cas.nyu.edu/content/nyu-as/cas/academic-integrity.html
https://cas.nyu.edu/academic-integrity/honor-code.html

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. Work
submitted must be original and authentic. Sharing or receiving answers (for quizzes and
post-labs) using group chats or internet platforms is considered cheating as well. Anyone
found to have engaged in plagiarism or cheating will be subject to sanction according to
CAS guidelines, which may include receiving an F in the course and referral to the Dean
for further disciplinary action.

**Moses Center for Student Accessibility**

*Academic accommodations* are available for students with disabilities. Please contact the Moses
Center for Student Accessibility (212-998-4980 or mosescsa@nyu.edu) for further information.

Students who are requesting accommodations are advised to reach out to the Moses Center as
early as possible in the semester for assistance.