

CHM 105: Introductory Chemistry Laboratory (for Chemistry 103) Fall Semester 2021 Syllabus and Schedule

Laboratory Coordinator

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Required Laboratory Materials

- CHM 105 lab manual (will be posted gradually on Brightspace)
 - RAM account and ID card, for purchases at the CHM Stockroom (Room 180)
 - Safety glasses & knee-length lab coat (can be purchased at the Stockroom*)
 - For some experiments, NITRILE gloves (can be obtained at the Stockroom*)
 - A scientific calculator with log and exponent functions
 - Lab Prep Lessons and Announcements at the CHM 105 Brightspace website
 - Students must take responsibility for carefully studying all lab materials and following all study/safety instructions.
- * Note that safety equipment can also be purchased off-campus but must be approved by the Stockroom Manager before being used in lab.

Important Fall 2021 Semester Dates

- September 8: First day of classes
- September 8-14: Open Add Period in e-Campus
- September 15-21: Late Add Period in e-Campus, permission numbers required for enrollment
- September 21: Last day to Add courses via e-Campus, late add form needed after this point
- September 30: Courses dropped on or after this date will receive a **W**
- October 11: Classes **do not** meet, offices are closed. Columbus Day
- October 20: Last day for students to drop courses in E-Campus (late drop form needed after this date)
- November 2: Election day, classes **do** meet, offices **are** open
- November 10: Veterans Day makeup (Thursday classes meet on Wednesday 11/10/21).
- November 11: Veterans Day, classes **do not** meet, offices are closed
- Nov. 25 - 28: Thanksgiving Recess
- December 13: Last day of classes
- December 14: Reading Day for Exams
- Dec. 15-17 & 20-21: Final exam period
- December 22: Final exam make-up day (Used only in the event of Official Snow Delay or Cancellation)
- December 29: Grades due in e-Campus by 12 Noon

Schedule of Experiments (may be revised in the event of unforeseen circumstances)

Dates	Day	Experiment
9/6-9/10	M	No labs
	Tu	No labs
	W	Check-in/safety
	Th	Check-in/safety
	F	Check-in/safety
9/13-9/17	M	No labs
	Tu	Check-in/safety and Lab 1
	W	Lab 1
	Th	Lab 1
	F	Lab 1
9/20-9/24	M	No labs
	Tu	Lab 2
	W	Lab 2
	Th	Lab 2
	F	Lab 2
9/27-10/1	M	No labs
	Tu	Lab 3
	W	Lab 3
	Th	Lab 3
	F	Lab 3
10/4-10/8	M	No labs
	Tu	Lab 4
	W	Lab 4
	Th	Lab 4
	F	Lab 4
10/11-10/15	M	No labs (also Columbus Day)
	Tu	Lab 5
	W	Lab 5
	Th	Lab 5
	F	Lab 5
10/18-10/22	M	No labs
	Tu	Lab 6
	W	Lab 6
	Th	Lab 6
	F	Lab 6

Dates	Day	Experiment
10/25-10/29	M	No labs
	Tu	Lab 7
	W	Lab 7
	Th	Lab 7
	F	Lab 7
11/1-11/5	M	No labs
	Tu	Lab 8
	W	Lab 8
	Th	Lab 8
	F	Lab 8
11/8-11/12	M	No labs
	Tu	Lab 9
	W	Lab 9 (Th. sections)
	Th	Veteran's Day, No Labs
	F	Lab 9
11/15-11/19	M	No labs
	Tu	Lab 10
	W	Lab 9 (Wed. sec. pri. wk.)
	Th	Lab 10
	F	Lab 10
11/22-11/26	M	No labs
	Tu	Lab 11
	W	Lab 10
	Th	Thanksgiving Break
	F	Thanksgiving Break
11/29-12/3	M	No labs
	Tu	
	W	Lab 11
	Th	Lab 11
	F	Lab 11
12/6-12/10	M	No labs
	Tu	Makeups
	W	Makeups
	Th	
	F	

List of Experiments (all in person)

Lab 1 – Measurements
Lab 2 – Density
Lab 3 – Chemical Formula
Lab 4 – Separation of a Mixture
Lab 5 – Structure, Geometry, Polarity
Lab 6 – Six Bottle Study
Lab 7 – Stoichiometry
Lab 8 – Ideal Gas Law
Lab 9 – Solubility and Solutions
Lab 10 – Reaction Rates
Lab 11 - An Introduction to Acids, Bases, pH, and Buffers
Makeup (Lab 12) - Analysis of Vinegar by Titration

Attendance Policy

CHM 105 is a laboratory course, which requires hands-on experimentation and direct observation of physical and chemical changes. For this reason, students **MUST** be present to conduct each experiment. Attendance is required at the day and time for which each student has registered. Under **NO** circumstances will students be permitted to attend a lab section other than the one for which they have officially registered (except for the Mandatory Safety Training in Week 1).

The course includes 11 laboratory experiments, and a 12th make-up experiment. As the course grade is calculated upon completion of 10 experiments, each student is permitted **ONE** absence without penalty. Any student who has a second absence **MUST** complete the make-up experiment on one of the designated days in the last week of classes. A reservation at the Stockroom (Beaupre 180) is required to participate in a make-up lab session.

Students who do not complete 10 experiments can expect to receive a failing grade in the course. “Complete” means the student submitted the Pre-Lab Assignment, worked the experiment, and submitted the Report Sheet.

Grading Policy

The course grade will be based on the following:

11 Pre-Lab Assignments (20 points each)	220 points
11 Lab Performance Assessments (10 points each)	110 points
11 Report Sheets (60 points each)	660 points
Total	990 points

Note that for each lab experiment, students have the opportunity to earn a total of 90 points:

- 20 points for the Pre-Lab Assignment
- 10 points for the Lab Performance Assessment
- 60 points for the Report Sheet

NO extra credit assignments will be given. The standard grading scale (90%+ = A-/A; 80-89% = B-/B/B+; 70-79% = C-/C/C+; 60-69% = D/D+; <60% = F) will be in effect unless modified as described below.

Grades in CHM 105 are **earned** by demonstrating mastery/proficiency in the required skills; these skills include not only chemistry laboratory techniques, but also problem-solving, critical thinking, and the ability to apply course concepts within relevant laboratory scenarios.

To be clear: Each student's grade is determined by the **quality** of that student's performance on the CHM 105 work items (described in detail below). The grade is *not* open to negotiation, and it is *not* dictated by what is needed to progress in the student's chosen program of study. The grade must be **earned** by achieving **proficiency in** (and ideally, **mastery of**) the skills identified as essential to ongoing success in the student's degree program.

The teaching assistant assigned to your section does all of the grading for the course. Contact your TA immediately if you have a problem with the grading of your work. If the problem does not get resolved through your TA, contact the course coordinator. **No changes in grades will be made if the problem is not addressed within ONE WEEK of receiving your graded material back from your TA.**

Do not compare the grading on your work to that of a student with a different TA. All teaching assistants grade slightly differently. At the end of the semester, the course director evaluates the grades of each TA and will assign a scale to each section, **if necessary**, to ensure that the overall letter grades of the teaching assistants are fair. Please note that there is no guarantee of a scale; scales will only be applied **when necessary** to ensure that overall letter grades are fair despite variations in grading.

Students should be aware that the CHM 103 lecture and CHM 105 lab are separate courses. The lab is intended to complement the lecture by illustrating many of the lecture concepts; however, the timing of these concepts *may not* be synchronized with the lecture presentation. The lab also includes some additional concepts that are not taught in lecture.

NOTE: For those CHM 105 students currently enrolled in the CHM 103 lecture course:

If you DROP the CHM 103 lecture course, you MUST ALSO DROP the CHM 105 lab.

It is recognized that some students enrolled in the CHM 105 lab may have completed the CHM 103 lecture in a previous semester or previous academic year. For this reason, each of the experiments in the lab manual is written as a complete lesson, and supplemental materials - including video tutorials - will be available at the Brightspace course site. Any student who does a thorough job studying the provided course materials, preparing for each experiment, practicing the required skills, and utilizing the Study Help Resources, should be able to succeed in the course.

Incomplete Policy

Incomplete grades cannot be assigned except in the case of a real emergency. Any grade of incomplete must be approved by the department chair and the dean. In order to receive an incomplete, a student's **coursework must have been passing** and the student **must have completed at least half of the coursework for the semester**. Students receiving a grade of Incomplete should make necessary arrangements with the lab coordinator to complete the work prior to the following mid-semester. **If an incomplete is not made up prior to the two year grade change deadline established by the University, the "I" will be replaced with a grade calculated for the student based on the work completed and including zeroes for any work not completed.**

Disabilities Accommodations

Any student with a documented disability is encouraged to contact the lab director as early in the semester as possible so that we may arrange reasonable accommodations. If you have a chronic condition or a sports schedule that may result in missing more than one lab, please see the lab director about setting up an alternative lab session in case you miss your own.

Laboratory Work Items

1. Pre-Lab Assignments

Each laboratory experiment includes a Pre-Lab Assignment so students can demonstrate that they have thoroughly prepared for their experimental work. Information about the Pre-Lab Assignments will be provided in the “Remedies for Common Laboratory Ailments” discussion presented as part of the introductory material in the CHM 105 lab manual. Students must take responsibility for reviewing these materials, contacting their lab instructor with any questions, and taking the necessary steps to prepare. Pre-lab assignments are due at the start of the lab period each week and will be collected by the TA as students enter the lab. Any student who does not submit their pre-lab assignment as they enter the lab will receive a zero for the pre-lab assignment.

2. Report Sheets

Report Sheets are due at the NEXT lab meeting the student attends, and they must be submitted at the START of that lab session.

An immediate late penalty of 10 points will be assessed for Report Sheets not submitted in a timely manner. An additional 10 point late penalty will be assessed EACH business day after the due date, so that Report Sheets which are a full week late are worth ZERO points.

As described in the “Remedies” document, the Report Sheets MUST be written in blue or black ink. Your lab instructor MUST look over your data/observations and sign your Lab Notebook pages before you leave the lab.

3. Lab Performance Assessment

During experiments, the lab instructor will objectively assess each student’s performance in the lab and assign 0 to 10 points for appropriate laboratory behavior and technique.

Lab performance points are AWARDED for: demonstrating familiarity with the experimental procedure, demonstrating proper experimental technique, keeping personal lab bench and communal areas clean, properly (and carefully) disposing of waste, interacting appropriately with fellow students and the teaching assistant, and adhering to safety regulations.

Performance points will be DEDUCTED for: unsafe experimental technique, leaving personal lab bench or communal work areas messy (chemical spills or equipment left out/in disarray), improper disposal of chemical waste, removal of safety glasses/goggles during an experiment, non-emergency cell phone use, or disruptive behavior during the

laboratory period.

Chemistry Department Safety Policies

- Students must be wearing their personal protective gear (lab coat and safety glasses or goggles) BEFORE they enter a teaching laboratory. (If required, nitrile gloves should be put on when students begin working on the experiment.)
- No student is permitted to enter a chemistry lab room unless they're wearing BOTH a lab coat and safety glasses or goggles. These items MUST be worn at all times while students are in a chemistry lab, and they can be removed only AFTER students have safely exited the lab room.
- Chemistry department personnel are prohibited from loaning safety glasses by State of Rhode Island health/hygiene regulations. Students who forget their safety glasses should NOT ask about loaner eyewear, and must purchase a replacement pair of safety glasses at full cost.

Any student who comes to lab without the required personal protection items will NOT be permitted to conduct the experiment and will receive a ZERO for that week's experiment.

NOTHING is more important than the personal safety of the occupants of the laboratory. Any student who deliberately or carelessly disregards a written or oral safety instruction can be expelled from the laboratory and will receive a grade of zero for the experiment. A student who is expelled twice from the laboratory for safety violations will automatically receive a failing grade in the course.

Careless disregard of safety instruction includes (but is not limited to) the following:

1. Any student who improperly disposes of chemical waste (pours solutions into laboratory sinks, or places solid waste into a garbage can).
2. Any student who is NOT wearing the following personal protection items: safety glasses or goggles, lab coat (must cover the arms to below the elbow and legs to below the knee), nitrile gloves (when required), shoes which fully enclose the foot (no open toe or heel) and socks.
3. Any student who has NOT completed the Pre-Lab Assignment (so as to demonstrate effective preparation for that day's experiment).
4. Any student who uses a cell phone in lab without prior permission, or for reasons other than a laboratory emergency.

Students who forget to bring their personal protection items will face a costly penalty! Students with inappropriate footwear can purchase protective booties; however, a replacement pair of safety glasses or a lab coat must be purchased at full price. None of these items may be returned to the stockroom after they have been worn.

Laboratory Equipment Bills

Each lab student is responsible for the equipment provided in his/her assigned drawer. Because that drawer is shared with students in other sections, each student must **carefully** inventory the equipment in the drawer to verify that all items are present and in good working order. This inventory **must** be conducted at both the **beginning** and

end of every lab period.

Students will be charged for any items that they break during their own lab section. Students will *also* be charged for any items reported missing or broken by the student who inventories that drawer at the beginning of the *next* lab section. **Make sure to verify that all equipment has been returned to your drawer before leaving lab!**

Students *must* take responsibility for checking the Chemistry Stockroom website to determine whether they have an outstanding lab equipment bill. A link to the Stockroom website is available from the CHM 105 Brightspace course site. The deadline to pay lab equipment bills at the Chemistry Stockroom is at the close of business at the end of Final Exam week. Any student who has an unpaid bill at the Chemistry Stockroom after that day will have a hold placed on their e-Campus account. This hold may prevent students from registering for classes, obtaining a transcript, or obtaining a diploma.

URI Policy on Academic Honesty

Although students may be conducting each experiment in pairs, **each student's Pre-Lab Assignment, and Lab Report Sheet MUST be completed on an individual basis.** Students who submit work that is clearly the same as another student's work are in violation of the University's Policy on Academic Honesty. Those students will be held accountable as described in that Policy.

Academic dishonesty in any form is considered a serious offense, and disciplinary action will be taken immediately. The URI policy on academic honesty is detailed in the student handbook (available online), and is summarized below:

"Students are expected to be honest in all academic work. A student's name on ANY written work, including assignments, lab reports, papers, or exams, shall be regarded as assurance that the work is the result of the student's own thought and study. Work should be stated in the student's own words, properly attributed to its source. Students have an obligation to know how to quote, paraphrase, summarize, or reference the work of others with integrity.

When students are authorized to work jointly, group effort MUST be indicated on the work submitted."

The following are some examples of academic dishonesty seen in the chemistry labs:

- Answers on pre-lab assignments, report sheets, etc. are identical, or nearly identical, to those of another student. Even just one identical answer is considered academic dishonesty. While it is acceptable to discuss lab information, each student should then work alone to answer all questions independently and in their own words.
- Having another student's completed, or partially completed, manual in your possession, or using such a manual to assist you in answering questions on your own lab work items.
- Having another student's pre-lab assignment(s) or report sheet(s) in your possession, or using these items to help you answer questions on your lab work items. This includes items from previous semesters.
- Unauthorized communication, copying from another student's work.
- Using unauthorized information from your lab manual or another resource during a concept review.
- Altering or attempting to alter grades.
- Changing data to match expected results or results obtained by another student.

- Providing materials for another student to copy from.

As noted in the student handbook: When there is an allegation of academic dishonesty, the instructor may fail the student for the assignment, or recommend that the student fail the course.

URI Chemistry Department Plagiarism Policies Specific to CHM 105

No section of your Pre-Lab Assignment, or Report Sheet can be identical (or nearly identical) to that of another student without attribution. If sections of Pre-Lab Assignments or Report Sheets are the same (or nearly the same) as another source (e.g., a student's paper, a section of the lab handout or lecture textbook, an explanation from a TA, information posted on the internet), it will be regarded as plagiarism.

The consequence of a first instance of plagiarism is a grade of zero on that section of the graded paper. If there is a repeat instance of plagiarism, the penalty is a grade of zero on the entire Pre-Lab Assignment, Concept Review, or Report Sheet. A zero score due to a plagiarism incident will stand, and cannot be dropped as the lowest grade earned on a Lab Work Item.

You will be expected to sign the department plagiarism policy at the start of each semester that you take a chemistry lab. A copy of this policy is included in this syllabus for your reference.

Study Help Resources

Chemistry Graduate Student Teaching Assistants in Beaupre Learning Center via Zoom

The Beaupre Learning Center is staffed by the Chemistry Department's Teaching Assistants and members of the AXE Chemistry fraternity, and provides a study resource for preparing for lab and working problems. If you have a general question about lab, or need help with questions or calculations, you can see any one of the TAs; however, those TAs teaching the CHM 105, 102, or 114 Introductory or General Chemistry labs will be *most* familiar with the content of this course. A schedule of the Beaupre Learning Center office hours will be available via a link in your CHM 105 Brightspace site as soon as the schedule for the semester has been finalized. The Beaupre Learning Center via Zoom is recommended as the #1 study help resource for questions about chemistry lab courses, because the TAs actually teach the chemistry department lab courses.

Chemistry Tutors at the Academic Enhancement Center (AEC)

The AEC (www.uri.edu/aec) can help you keep up with class work and study course materials more effectively. Their staff of learning specialists and student tutors can help you identify a study approach, develop effective study strategies, understand course concepts, and practice skills productively. You can study at the AEC alone or in small groups. Please note that tutors at the AEC are not able to help with lab specific questions, but they can help you to understand the general material covered in CHM 105 and to improve your overall study skills. For the AEC schedule, please see their website (www.uri.edu/aec).

Assistance from Oleg

By appointment. Feel free to reach out!

Study Help Advice

Whether you're seeking help from a Chemistry Teaching Assistant, an AEC Tutor, or Oleg, you'll want to arrive at your help session on time and fully prepared, to make the discussion as productive and efficient as possible. This means you should bring all relevant study/reference materials with you to the session, including your CHM 105 lab manual, your data/observations from the lab experiment, your scientific calculator, and your written list of specific questions and/or goals for the help session.

Departmental Plagiarism Policy

One of our goals in this course is to reinforce the importance of scientific integrity. In recent years, there have been numerous examples of established scientists generating falsified data or copying material from another source. Acts of plagiarism both damage science and can have important impacts on society. The possibly falsified data associated with the connection between childhood vaccines and autism is an important recent example that has adversely affected both science and public health. Acts of plagiarism have destroyed many scientific careers. Consequently, we want to make clear to you what plagiarism is and penalize acts of plagiarism in a manner that makes clear its seriousness.

Your laboratory reports contain information about the purpose, theory and results of your experiments. Each of you prepares a laboratory report associated only with your name. By implication you are the sole author of that report, and no section of your report can be identical (or nearly identical) to that of another person without attribution. Reports or sections of reports identical to any other source whether that source is another student, a section of a book, or information obtained from others on the web will be treated as plagiarism. In a chemistry lab report, the first instance of plagiarized sections is to receive a grade of 0. For repeat instances of plagiarism, the entire report will receive a 0, and the incident will be referred to the Chair of the Chemistry Department and the Dean of your college.

In essence, for any material submitted for a grade, text that is paraphrased from a single source must be attributed to that source. In general, material should not be copied directly, but if necessary, the fact that it has been copied should be clearly indicated (quotation marks, etc.). This applies to both text and figures and to both written and power-point presentations. For example, the copying-and-pasting of figures from web sources for use in power-point presentations is not incorrect, so long as you clearly show that you did not create the artwork and give credit to the source from which it was copied. If you have further questions about materials that may constitute plagiarism, please visit www.plagiarism.org.

To avoid plagiarism in lab reports, some specific guidelines to follow when writing your report are listed below.

1. Your laboratory reports contain information about the purpose, theory and results of your experiments. Each of you prepares a laboratory report associated only with your name. Since you are the sole author of that report, no section of your report can be identical (or nearly identical) to that of another person without attribution. Reports or sections of reports identical to any other source whether that source is another student, a section of a book, or information obtained from others on the web is treated as plagiarism unless the citation is included.
2. Data analysis must be performed individually. Students often work together, and the plagiarism policy is not designed to discourage collaborative learning. However, while your original data may be identical to that of your lab partner, your calculations must be your own. The sections of your reports containing the calculations must not be identical or nearly identical to anyone else. From experience it is unlikely for any two people analyzing the same data to obtain exactly the same set of calculations in the same order with the same final results. To avoid even the appearance of plagiarism, if you work with another student, you must perform your calculations by yourself or with the help of one of the instructors. Nearly identical calculation sections are examples of plagiarism.
3. There is only one exception to the plagiarism policy given above. If you generate your data with a laboratory partner, the original data included in your report should be identical to that of your laboratory partner. The other sections of your reports, including all written work and all calculations cannot be identical to anyone including your laboratory partner.

I have read the plagiarism policy outlined above. I understand that I am responsible for my own laboratory report even when the experimental data are collected with partners. I understand that any part of a laboratory report, other than original data, identical to that of any other person is treated as plagiarism. I also understand that any section of a laboratory report taken from another source is treated as plagiarism.

Please note that due to the possible unprecedented circumstances any syllabus items are surely subject to change!