

Chemistry 499 Introduction to Teaching Chemistry Lab: Fall 2021

Welcome to Introduction to Teaching Chemistry Lab. In this course, the student will obtain hands-on experience in teaching Chem 171, Introduction to Experimentation. The purpose of the course is the development of teaching, supervisory, and communication skills needed by professional scientists.

Course Coordinator: Michael Vitarelli mvitarel@chem.rutgers.edu (848) 445-7439 (Wright Rieman 370)

Stockroom phone numbers: (848) 445-2318 (LIV)
(848) 932-9319 (D/C)

Training starts the week before the scheduled (in-person) experiment. Your instructions for the experiments, and keys for prelabs are posted on Canvas on a weekly basis under Files.

1. **During week five**, administer the safety quiz. The Safety Quizzes will not be returned to the students. The students must obtain a score of 80 percent or higher. If the students do not obtain a score of 80 percent or better, they must retake it. No student will be allowed to start experiments with a score less than 80. The goggles, and lab coats will be provided by the Stockroom. If you don't have a lab manual, please take one from the Stockroom.
2. **Syllabus for Chem 171**, make sure you study the syllabus for Chem 171 thoroughly. A total of 742 points are allocated as follows: density of water (35 pts), 11 other labs (649 pts, 59 points each), safety quiz (10 pts), review assignment (48 pts).

Instructor's Responsibilities for Teaching Chemistry 171

1. **Lab Training:** Each individual who has not taught the course before is required to undergo lab training provided by a head TA each week. The training starts a week before the actual experiments.
2. **Primary Responsibility:** Your primary responsibility is to help the students learn chemistry-both technique and theory. You should learn the capabilities of each student in your section. Walk around and talk with your students. Make sure you are aware of the students that are absent or are late. Note the names of the students that are making up a lab in your section. You must arrive on time.
3. **Prelab Talk:** You will give a short talk at the beginning of each lab. Before you start the short lecture, make sure all the students are gathered around the blackboard. You should discuss a) how students did on the previous experiment, explaining any obvious errors (very quickly); b) any announcements, such as make-ups in case of inclement weather; c) the theory and practicalities of the new experiment; and encourage students to come to office hours if they need assistance. We will give you suggestions for the material to cover for each experiment. It is important that you cover everything, because the students need to understand these points to have a meaningful experience in the lab. Explain the concepts when appropriate so that the students are not just following a recipe.
4. **Safety: You are responsible for the safety of your students.** Enforce all safety rules. **You must also adhere to all safety rules.** That especially means the wearing of regulation safety goggles during the entire lab period. You cannot wear a different kind of safety glasses. The stockroom personnel are authorized to remove anyone not obeying basic safety rules, after warning them. That includes instructors. You are a role model for your students. If you do not wear personal protective

equipment (goggles), the students never will. Wear the safety goggles over your eyes for the entire period. Do not wear the goggles on your forehead. Failure to maintain a safe environment for the students is of paramount importance. Do not grant exceptions to the dress code just because you think it is safe. Be watchful of students bringing food and/or drink into the lab. This includes water bottles. You should report any violations of this policy, or indeed any perceived safety violations or hazards, to the course coordinator. Note your concerns will be handled discretely and anonymously.

5. **Emergency:** In the event of an emergency, be calm. Safety first. Call 911 or have someone call 911. Get the students away from any unsafe condition. Get help if you need it. The stockroom personnel can help in almost any situation. If you must evacuate the lab, make sure you know how many students got out. Designate a gathering place outside the lab in case of an emergency.
6. **Lab Logistics:** The labs start and end on time. The stockroom personnel will unlock the doors and invite the students in, when the period starts. If the lab requires a lot of equipment and materials, leave more time for clean up. When the stockroom personnel say it's time to turn in equipment, it's time to turn in equipment. When the stockroom personnel say it's time to leave, it's time to leave.
7. **Housekeeping:** Keep the lab clean and usable. It is your responsibility to leave the room clean and usable by the next section. The students **should** clean up after themselves, but if they don't, then you must. You may penalize students who do not clean their areas. Make sure the sinks are not blocked. During the lab period, make sure the students have enough materials and that the balances are operating. Report any problems or malfunctions to the stockroom personnel. If you are running out of chemicals, it is because the students are taking too much. Take steps to prevent this from happening. Assess such things as basic understanding of the experiment, general lab skills, degree of preparedness, tidiness of the work area, handling of chemicals and wastes, and cooperation in following instructions.
8. **Students with Disabilities:** Some students have special needs due to documented disabilities. They must turn in a letter documenting the disability. They may turn in the completed data sheets at the end of the period and arrange a time each week either with you or the stockroom to spend one additional hour performing calculations and writing answers. Consult the coordinator if you have a student with a disability.
9. **Substitution:** It is your responsibility to find a substitute. If you are ill or cannot make it to a lab for a legitimate reason, arrange for another qualified instructor to replace you and inform the stockroom personnel and the coordinator as soon as possible. You can then cover their section. If you have a conflicting engagement that you know of at the beginning of the semester, please find a substitute and let us know.
10. **Academic Integrity:** Refer to the website for academic integrity information:
<http://academicintegrity.rutgers.edu/>

The University's policy on Academic integrity can be found at:

<http://academicintegrity.rutgers.edu/academic-integrity-policy>

Violations of Academic Integrity by 171 Students

Most of the violations you will notice are level two or higher. Level one would be working together on some post-lab questions (we tolerate some helping) after being asked to work independently. An example of level two might be two students turning in nearly identical lab reports, such that it is obviously only one student's work. The most serious violations you are

likely to see are level three. These could include a repeat offender for a level two violation, turning in a lab report from a previous semester, copying from another student during the final, or other very serious breach of ethics. In all cases of suspected violation, consult with the coordinator for advice on how to handle the situation.

Professionalism as demonstrated by you

Since you are placed in a position of authority, you cannot share information with the students in your section or other sections who happen to be your friends.

General Guidelines for Grading Chem 171

- a) **Be consistent.** The same rules have to apply to all the students in the course. There are always judgment calls, and the same paper graded by two different people will receive different scores. We try to minimize this by giving you detailed grading schemes. Follow them. Do not just give the entire section a grade of “40” and be done with it. The simplest way to maintain consistency is to grade the entire section at one sitting. That way you'll remember what you did to other students when you get to the bottom of the pile.
- b) **Be fair.** The reports should be graded on the merits of what is written, not your memory of whether the student causes problems. Do not look at the name on the paper until you've finished grading it. Follow our grading scheme
- c) **Maintain all records carefully and securely.** Each student's grades are confidential. If there is a question about a student's grade, we must be able to justify it from your notes and records.
- d) **Record the scores and changes to the scores** promptly. Enter grades in Sakai each week before lab begins. Also keep track of your grades in a separate place as hard copy. We need to ensure that you are grading appropriately and fairly. Keep track that the score was changed.

Frequently Asked Questions and Answers

Question 1 – What should I do if a student gives me a disability form?

Answer 1 – Forward these forms to me.

Question 2 – What happens if a student is absent or late.

Answer 2 – An absence will result in a zero grade for the missed experiment. If the student is more than 10 minutes late to the lab, take off 3 points from their lab. If the student is more than 20 minutes late, take off 6 points from their lab. No admittance to a lab if the student is more than 25 minutes late, unless a good excuse is given.

Evaluation and Grading of 499 Students:

- o Personal Compliance with Safety Regulations and Enforcement of Safety Regulations with Students
- o Attendance of the Introductory Meeting and other meetings if necessary
- o Timely attendance of weekly labs
- o Timely Coordination with the Stockroom for Unknown Preparation
- o Maintenance of office hours
- o Timely grading of labs.
- o Attendance of all training sessions (for Students taking 499 for the first time)

Chemistry 171/499 Head TA Responsibilities

1. **Lab Training:** Head TAs are responsible for providing training for the new teaching assistants. Each TA who has not previously taught is required to undergo lab training provided by a head TA each week. The training starts a week before the actual experiments at Beck Labs on the Livingston campus and takes three hours.
2. **Primary Responsibilities:** Head TAs have two primary responsibilities: a) to help the instructors gain confidence in teaching a lab and b) to maintain a safe educational environment. For majority of the instructors, it is their first time teaching.

You must arrive at Beck Labs on time. That means you must be in the lab, write appropriate information on the blackboard and be prepared to talk at least 30 minutes before the doors open. Arriving 30 seconds before the lab begins is **unacceptable!**

- Everyone has to follow safety guidelines; no short-cuts to safety procedures will be acceptable.
 - You must take attendance at the weekly training sessions; have the instructors sign in the composition notebook available in the stockroom each period.
 - Have the instructors run through the experiments like the students.
 - Show the instructors the typical mistakes that students make.
 - Suggest typical questions that students ask.
 - Go over typical pitfalls.
 - In addition, please go over the pre-labs and the post-labs. (The pre-labs are questions answered by the students before the start of the actual experiment, they may be electronic or on paper. The post-labs are the calculations performed by the students after they complete the lab with their own data.)
 - Ask the instructors to bring their graded lab reports from the previous week and make sure the lab reports are graded according to the keys provided to the teaching assistants, generally posted on the 499 Sakai website.
3. **Substituting for the instructors:** On occasion, the instructors may need a substitute due to scheduling conflicts; every effort is made for the instructors to handle it among themselves; however you may be asked to substitute for an instructor on a short notice.

EMERGENCY INSTRUCTIONS FOR INSTRUCTORS

In case you encounter an emergency situation while teaching your lab, keep in mind the following guidelines:

1. Stay calm and keep your class calm - don't panic.
2. Ask the stockroom attendant or a student to call 911 for help. Do not leave an injured student alone.
3. If it is necessary to evacuate the lab, do so in an orderly fashion. Group the students outside in a safe area, and do a headcount.
4. If a student is seriously cut, put on gloves and apply pressure using sterile gauze and/or paper towels, and if possible, elevate the cut area, unless instructed otherwise by the emergency personnel.
5. If a student faints, first check for other injuries and then cover him or her with a blanket. When the student regains consciousness, move him or her to a safe area where he or she can sit or lie down. In the past some students have fainted due to not eating.
6. If a student is splashed in the eye with a chemical, lead the student to the nearest eyewash and flush the eye with water for 30 minutes.

7. If a student is splashed with a corrosive chemical on the hand or arm, lead the student to the nearest sink and flush the area with water for at least 15 minutes.
8. If a student is splashed with a corrosive chemical elsewhere on his/her body, lead the student to the nearest safety shower. To protect the student's modesty, the lab instructor, stockroom attendant, or a designated student of the same gender should assist the student in removing clothing from the affected area. Ask the stockroom attendant for the blanket from the stockroom, and have other students hold it up as a curtain. Keep the student under the shower for at least 15 minutes.
9. If a student's clothing or hair should catch fire, command them to "stop, drop, and roll." This means the student should immediately drop to the floor and roll so as to extinguish the flames.
10. If a student should burn him or herself from a hot surface, assist the student in placing the burned area under cold water for at least 15 minutes.
11. If a student is to be taken to an emergency room, if possible find out the destination. If appropriate, ask the student to contact the course coordinator as soon as convenient to provide an update on his or her condition.

As soon as possible, the instructor or the stockroom attendant should contact the course coordinator to report the situation.