

# Introduction to Experimentation – Summer 2023 Syllabus

Welcome to Introduction to Experimentation (01:160:171). This handout provides information concerning lab policies and procedures. You are responsible for all the information that follows. Failure to comply with the rules contained in this packet can result in a loss of points and a consequent reduction in grade. No appeal will be considered on the grounds that you did not understand the rules. Material will be posted on [canvas.rutgers.edu](https://canvas.rutgers.edu)

Date	Experiment
May 30	In Person - Lab 1: Significant Digits and the Density of Water, Safety Quiz <sup>1</sup>
May 31	In Person - Lab 2: Density: A physical Property of Matter
June 1	Virtual - Lab 3: Paper chromatography
June 6	Virtual - Lab 4: Water of Hydration
June 7	Virtual - Lab 5: Net Ionic Equations
June 8	In Person - Lab 6: Empirical Formula of Copper Chloride
June 13	In Person - Lab 7: Reactivity of Metals.
June 14	In Person - Lab 8: Volumetric Analysis: An Acid-Base Titration
June 15	In Person - Lab 9: Evaluating Commercial Antacids
June 20	In Person - Lab 10: Determining Molar Volume of Carbon Dioxide
June 21	In Person - Lab 11: Enthalpy of Formation of Ammonium Salts
June 22	Virtual - Lab 12: Magnetic Behavior

<sup>1</sup>Every student must get 80% or better on the safety quiz. Every student must have a thorough and complete understanding of all the safety rules and follow them at all times. Students will not be allowed to work in the lab without first passing and signing the safety quiz.

## **Course Coordinator:**

Michael Vitarelli, Ph.D. [mvitarel@chem.rutgers.edu](mailto:mvitarel@chem.rutgers.edu) (Wright Rieman 370)

## **You need to purchase the text for this course:**

Introduction to Chemistry Lab Manual

Author: Donald Siegel & Michael Vitarelli

Edition: 2

Copyright: 2019

ISBN: 9781792483639

<https://he.kendallhunt.com/product/introduction-chemistry-lab-manual>

**You must have the book by the first day of class.** Do not buy the 1st edition, it is completely different from the 2nd edition. If you purchase the e-book, you must print out the corresponding lab and bring it to class. The book can also be purchased from the Rutgers University bookstore.

## Intellectual Property

The material for this course is copyrighted and may not be posted on any other web site at or outside of Rutgers without permission. Any violation of this policy will be treated as an academic integrity violation and will be referred to the Office of Student Conduct.

## Laboratory operations

Before each lab, you must complete the prelab assignment and the chemical hazard awareness form that you need to fill out for the chemicals you will encounter in that experiment and what precautions you must take in handling them. You will perform the experiment after your instructor discusses various aspects of the work. During this time, go to the blackboard and listen carefully to what your instructor is discussing; do not perform any lab related activity during this time. **SAFETY GOGGLES MUST BE WORN PROPERLY IN THE LAB FOR THE ENTIRE LAB PERIOD.** Safety goggles must be worn on the eyes and not on the forehead.

## Grading

A total of 650 points are allocated as follows: density of water (35 pts), 11 other labs (605 pts, 55 points each), and safety quiz (10 pts). Also, your lab instructor will 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 for the assessment of your grades. You will not need a separate lab notebook. Record all data directly on the data sheet in your lab manual and show all calculations. **NO EXTRA TIME WILL BE ALLOWED FOR UNFINISHED WORK.**

## Absences:

An absence will result in a zero grade for the missed experiment. Remember you will be standing and working in the lab for three hours and you need to observe common sense (such as sleeping and eating properly before coming to the lab) to avoid incidents. If you are sick or are injured, follow your doctor's orders and notify your lab instructor by email. We will never punish a student for being ill. If you become ill during the lab, let the TA know immediately!

**Valid** reasons include (but are not limited to):

- Religious observance (requires advanced approval).
- Illness or injury (requires documentation).
- Court dates (requires prior approval).

**NOT Valid** reasons include (but are not limited to):

- Dismissal from the lab due to the violation of safety rules such as dress code.
- Vacation plans. Family trips, weddings, or reunions, non-Rutgers group events.
- Transportation issues/car troubles (accidents on the way to the lab with a police are valid).
- Personal issues, job schedule.

There are no in person makeup labs during the summer session. Students who miss labs, with documentation, can perform a virtual experiment without penalty. Students may turn in

late virtual labs, within 3 days of the missed experiment, with a 10-point late penalty. Late work must be submitted on or by Friday June 23rd.

### **Students with Disabilities**

Please contact the office of Disability Services at <https://ods.rutgers.edu/> or tel: 848-202-3111 if you need permanent or temporary accommodation. We attempt to accommodate students with disabilities in an appropriate manner. Notify the stockroom/your TA/and the course coordinators of your disability by the end of the first lab period.

### **Academic honesty**

Use of lab reports from other students (past or present) is expressly forbidden. Both the lender and the borrower are subject to severe penalties. Some discussion about the labs is acceptable at the discretion of the TA, but you must perform all the work (including the data analysis and answering of questions) yourself. Here are some common violations of the academic honesty policy and the penalties that have been assessed in the past:

<b>Violation</b>	<b>Penalty</b>
Manufacturing data	Zero on lab
Possession of previous semester's lab report in class. (This includes electronic access by any method such as texting.)	Zero on lab
Performing unauthorized experiments (horseplay)	Zero on lab
Second offense for any of the above	Failure of course
Posting of material from this course on another website	Referral to the Office of Student Conduct
Untruthful medical note or documentation for make ups or excuses	Referral to the Office of Student Conduct

### **Chain of Command**

If you have a question about grading, you should first talk about it with your lab instructor. If you are not satisfied with the explanation, you may raise the question with the course coordinator. We will not intervene for questions of a small number of points. Decisions made for safety (such as ejection for violation of safety rules) can be made by any lab instructor, the stockroom personnel, the coordinator, or a chemistry faculty member. These decisions are final and not subject to appeal.

### **Students with Medical Conditions**

Some medical conditions such as pregnancy, asthma, allergies to certain chemicals, or other conditions may be affected by exposure to chemicals. If you believe you are pregnant or if you have a medical problem which might be affected by chemicals, please contact the course coordinator before the lab commences or as soon as you become aware of such a condition. We will fully respect your privacy and you do not need to disclose the nature of your medical condition to us. It is, however, imperative that your physician be informed of any chemicals you may be in contact with during the semester so that he/she can determine whether it is safe for you to participate in lab assignments. We will provide you with information for your

physician regarding any substances you may be exposed to. We simply require that you bring in a note from your physician indicating that they have reviewed this information and whether you may safely proceed with laboratory work. Rutgers Environmental Health and Safety (REHS) is available to assist you if your doctor recommends that you avoid or minimize contact with certain chemicals. Please feel free to contact them at [\(848\)445-2550](tel:8484452550) to request assistance.

## **LAB SAFETY RULES**

1. An instructor must be present in the labs at all times. You are not permitted to be in the laboratory when a lab instructor is not present.
2. Report all accidents and injuries to your lab instructor.
3. Follow the procedures in the lab manuals, and only those procedures. You are only allowed to do authorized experiments.
4. Horseplay in the lab is unacceptable behavior and is cause for immediate ejection.
5. **You must wear safety goggles on your eyes (not foreheads) in the lab at all times.**
6. Contact lenses are not permitted; trapped vapors may cause injury to the eye.
7. Know the location and use of the closest eyewash, safety shower, and fire extinguisher. If you get chemicals in the eye, immediately flush the eye with copious amounts of water from the eyewash. For other parts of your body, wash the affected area thoroughly using the sink or safety shower.
8. Keep your book bags and other non-essential items at designated spaces only.
9. Bare feet, legs, or midriffs are not allowed in a chemistry lab. Sandals, open-toed or open-backed and open-topped shoes, shorts, or halters are not enough protection. Legs must be covered completely. If you have long hair it must be tied back. If you are not properly attired, you will not be admitted to the lab. If you are ejected from the lab for improper dress, you will not be permitted back until you are properly dressed. If you miss the lab, or do not finish, you will not be permitted to make the lab up, and the absence will NOT be considered excused.
10. The vapors of a number of solutions are quite potent and can irritate or damage the mucous membranes of your nasal passages and throat. Do not smell any chemicals. Also, never taste chemicals or solutions. They may be poisonous or corrosive.
11. Always keep burners under the hood. Never apply heat to the bottom of the test tube; always apply it to the point at which the solution is highest in the tube. A suddenly formed bubble of vapor may eject the hot and perhaps corrosive contents violently from the tube (an occurrence called "bumping").
12. No eating, drinking, or smoking in the lab. You may not bring in anything consumable, either. Water bottles (or other drink containers) are not permitted in the lab, even if they stay in your backpack.
13. Never taste chemicals or solutions—poisonous substances are not always so labeled. Label all containers. Stock solutions must remain on the stock solution bench. Be sure to replace the same cap or stopper on the reagent bottles. Do not put medicine droppers or pipettes in the reagent bottles. Do not take too much stock solution. If you accidentally take more than you need, do not return the excess back in the reagent bottle, try to give it to another student or dispose of the excess as instructed.

14. Unless otherwise stated, gloves must always be worn in the labs. If you need to use your calculator/phone or pen/pencil, take off your glove, from your dominant hand, before touching these. Afterwards put on a clean glove and discard the old one. This will help prevent contaminants from being transferred to your items.
15. Make sure your sink is cleaned out before leaving the lab.
16. Beware of hot glass. It looks cool long before it may be handled safely.
17. You must wash your hands at the end of the lab even if you have been wearing gloves. This will prevent you carrying something out on your hands, which you later might get in your eyes or onto food.
18. **Inform your TA if you have a medical condition that requires special consideration.**
19. If you are unsure on anything please ask your lab instructor or instructor.
20. During the molar volume of carbon dioxide experiment do not force the stopper into the rim of the flask. Gently push the stopper into the rim of the flask. If you put too much pressure on the stopper, while the flask is filled with water, the flask can shatter and can cause severe injuries.