

Introduction to Experimentation – Fall 2021 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

Date	Experiment
9/1-9/10	No Labs
9/13-9/17	1: Virtual - Significant Digits and the Density of Water.
9/20-9/24	2: Virtual - Density: A physical Property of Matter.
9/27-10/1	3: Virtual - Paper chromatography.
10/4-10/8	4: Virtual - Water of Hydration.
10/11-10/15	5: Virtual - Net Ionic Equations.
10/18-10/22	6: In Person - Safety Quiz ¹ and Empirical Formula of Copper Chloride.
10/25-10/29	7: In Person - Reactivity of Metals.
11/1-11/5	8: In Person - Volumetric Analysis: An Acid-Base Titration.
11/8-11/12	9: In Person - Evaluating Commercial Antacids.
11/15-11/19	10: In Person - Determining Molar Volume of Carbon Dioxide.
11/22-11/26	No Labs - Thanksgiving
11/29-12/3	11: In Person - Enthalpy of Formation of Ammonium Salts.
12/6-12/10	12: In Person - Magnetic Behavior. Review Assignment due this Friday.

¹Every 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 (mvitarel@chem.rutgers.edu) (848) 445-7439 (Wright Rieman 370)

Stockroom phone numbers: (848) 445-2318 (Beck-LIV) (848) 932-6160 (HSB-D/C)

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 can purchase the book directly from the publisher, see link above. Do not buy the 1st edition, it is completely different from the 2nd edition. Also, do not purchase the e-book.

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 do two things: 1. You must read the experiment thoroughly and look up the concepts in any general chemistry textbook. 2. Complete the prelab assignment including 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, changes in procedure, and any tips. 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 period.** Safety goggles must be worn on the eyes and not on the forehead. **PENALTIES FOR VIOLATIONS WILL BE IMPOSED WITHOUT WARNING.**

Grading

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). 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. According to University policy, regularly scheduled classes take priority over common hourly exams and your other instructor ***must*** make alternate arrangements.

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 the stockroom or your TA by phone or email. We will never punish a student for being ill. While it is in your best interest to perform each experiment, this should not be done at the expense of your health. If you become ill during the lab, let the TA know **immediately!** We will excuse your absence if you become ill during the experiment.

Valid reasons include (but are not limited to):

Religious observance (requires advanced approval).

Illness or injury (requires documentation).

Certain Rutgers sponsored activities (requires advanced approval). These do NOT include club activities/events.

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.

Job schedule.

Transportation issues/car troubles (accidents on the way to lab with a police are valid).

Personal issues.

Valid absences may be made up; not valid absences may not be made up. Please make sure the documentation is provided in the time frame requested.

Students with Disabilities

Please contact the office of Disability Services at <https://ods.rutgers.edu/> or tel: 848-445-6800 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. Also make arrangements for the stockroom/TA and course coordinator to receive a copy of the disability letter by the end of the first week of classes.

Academic honesty

You are being graded on the work **you** perform. 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:

Violation	Penalty
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 offence 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, or the coordinators, or a chemistry faculty member. These decisions are final and not subject to appeal. If you have a question about content, concepts or procedures then you may ask any course personnel for help.

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. You are not permitted to be in the laboratory when a TA is not present.
2. Report all accidents and injuries, no matter how minor, to your TA.
3. 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.**

Contact lenses (hard or soft) are not permitted: trapped chemicals may cause injury to the eye.

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.

6. Keep your book bags and other non-essential items at designated spaces only.
7. 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 to within 1 inch of the top of your shoes. If you have long hair it must be tied back. Old clothing or a laboratory apron or coat is highly recommended. **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 valid. If your back is exposed when you bend over then your top is too short and you will not be allowed to work.

8. The vapors of a number of solutions are quite potent and can irritate or damage the mucous membranes of your nasal passages and throat. If you must smell a chemical, hold its container away from your face and waft its vapor gently toward your face with your hand. For reactions involving poisonous or noxious gases, use the hood by placing the container well within the marked lines. At Douglass, **ALL WORK MUST BE DONE INSIDE THE HOODS!**

9. 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”).

10. 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.

11. Never taste chemicals or solutions—poisonous substances are not always so labeled.

12. 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 the excess as instructed. Grades may be reduced if instructions are not followed and materials are found where they should not be.

13. Unless otherwise stated, gloves must always be worn in the labs.

14. Make sure your sink is cleaned out before leaving the lab.

15. Beware of hot glass—it looks cool long before it may be handled safely.

16. You must wash your hands at the end of 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.

17. **Inform your TA if you have a medical condition that requires special consideration.**

18. 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 will shatter and can cause severe injuries.

WHEN IN DOUBT, ASK YOUR INSTRUCTOR