

Laboratory Policies

PURPOSE

To acquaint you with the rules and procedures used in the CHEM 122 and 124 laboratory sections at Eastern Michigan University.

PREREQUISITES

Unless you are repeating the course, you must be currently enrolled in the corresponding lecture: 121 lecture with 122 lab, and 123 lecture with 124. The lab leans on material covered in the lecture, particularly in 124.

GRADING

As with all college courses, grading is entirely the prerogative of the individual instructor. *Be sure your instructor makes his/her grading policies clear to you at the start of the term.* Your grade will be based on the scores received for the lab reports (mainly), a written exam, a lab skills exam and, optionally, some quizzes.

Lab reports are due at the end of the laboratory period and late reports will not be accepted. It is always better to turn in an incomplete report (and receive some credit) than a late report, for which you will receive no credit.

Reports are normally graded by the teaching assistants (and, subsequently, reviewed by the instructor). Questions regarding graded reports should be directed first to the teaching assistant who graded it. If you are not satisfied, you may then appeal to the instructor. The instructor may request that you make your case in writing, for review at a later, more convenient time.

Keep your old lab reports. They are your record of attendance and of how you have performed. You may want them for the lab final.

WHAT TO BRING

Each week, you must bring a pair of approved goggles and a copy of the experiment you will be performing. Experiments can be downloaded from the chemistry department web site: www.emich.edu/chemistry/genchem

PRELABS

For every experiment in the 122/124 labs, there is a prelab assignment that must be completed. These assignments can be accessed via the Canvas course shell for the lab.

After the student enters correct answers for all of the questions into the computer, he/she will obtain an authorization sheet (with individualized authorization number). **Without this sheet, you will not be admitted to the lab, and will be assigned a grade of zero for that experiment (CHEM 122) OR the instructor will deduct points from your score (CHEM 124).** Some instructors will not require the printout and will just check the scores in Canvas. *Assume you should bring the printout unless your instructor specifically tells you otherwise.*

The purpose is for you to understand what you are doing in the lab. The prelabs *closely* simulate the calculations that you will need to do, possibly as part of the experimental procedure, but certainly for the data analysis after the experiment. You are strongly encouraged to begin each prelab *several days* before its scheduled lab period, in case you need help.

GETTING HELP

Help with the chemistry should be sought first in the written material at hand. One of the course goals is to develop your self-confidence in your ability to work independently, given a set of *written* instructions. A background review for each experiment is contained in the introduction to that experiment. Also, since the lab is coordinated with and assumes reasonable mastery of the lecture material, your lecture text should be a good source of help. Also, there are some links to hints in many of the prelab assignments.

If you have given it your best shot and are still stuck, live help is available from tutors, your teaching assistant, and your instructor. However, remember that their job is to get you pointed in the right direction, *not to work your problems for you*. It can be helpful to work with other students, but don't let anyone do your work for you.

TIME MANAGEMENT

Since each lab report will be turned in at the end of the lab period it is important that laboratory time be used wisely. All of the experiments can be completed in the time allowed if you are properly prepared and do not waste your valuable lab time.

Come to lab on time. If you are late for lab, points may be deducted or you may not even be allowed to do the experiment! The prelab talk often contains necessary safety and procedural instructions. If you are allowed to begin late, do not expect to join a group that has already started, and be prepared to work alone. You will not be allowed extra time. Also, there is no guarantee that enough equipment will be available to accommodate such special needs.

Finally, work efficiently. Do not stand around waiting if you have something that needs doing.

ATTENDANCE

Each experiment is an important part of the laboratory experience. Therefore, students are expected to be in lab every week, and no labs will be dropped when computing course grades.

If you must miss a lab, it *might* be possible to arrange a makeup. There are two conditions: (1) the absence must be excused, and (2) the makeup must occur in the same week as the absence.

Excused absences are possible under extenuating circumstances. You should contact your lab instructor within one work day of the lab period missed. If you are unable to reach your instructor, leave a message for him/her at the Chemistry Department Office: 487-0106. *A written excuse on official stationary with the telephone number of the appropriate contact person will be expected upon your return.*

Examples of potentially acceptable excuses are the following: sickness, court appearance, being in jail, funerals, serious illness within the immediate family, or major religious holidays (with, at least, one week prior notification). Potentially unacceptable excuses include alarm clock failure, transportation problems, conflicts with work schedule, vacations, weddings, or any other personal business.

Experiments must be made up in another laboratory section that is currently doing the same experiment. *These arrangements must be made in advance, with the approval of both your instructor and the instructor of the section in which you wish to do your makeup work.*

If an excused absence cannot be made up, your instructor will either assign your score pro rata or increase the value of your lab final. An unexcused absence will result in a score of zero for that particular experiment, significantly lowering your course grade.

WORKING WITH A PARTNER

For many of the experiments you will be working with one (or two) laboratory partner(s). This may be due to equipment limitations, to allow you to get everything done during the time allowed, or simply to give you experience working with other people since life is like that.

Ordinarily the group will be allowed to collaborate completely and may be allowed to turn in one report for which you will receive the same grade. (Some instructors require each student to turn in his/her own report - you should check with your instructor.) Therefore, your partner's mistakes become your own so it's good to always keep one eye on what your partner is doing. It may even be that when you are writing your report you will not be able to agree on something. In this case you may choose to submit individual reports.

Never let your lab partner do your experiment for you. When your lab skills exam comes, you will be expected to know how to use all of the equipment and perform all of the techniques used in the laboratory. Therefore, it is a good idea to keep your old lab reports or make copies of those reports your partner keeps. In fairness to everyone in the lab, many instructors will either assign partners or require that you work with someone different every lab period.

ACADEMIC HONESTY

It is especially important in a laboratory situation, where some work must be done collaboratively, to be clear on exactly when and to what extent you are expected to work alone. The Academic Honesty Policy of the EMU College of Arts and Sciences is reproduced on page viii, and serves as a good general guide. Pay careful attention to specific instructions, both written and oral,

given for each particular experiment. If in doubt about what is proper, ask the instructor *before the fact*.

The use of old lab reports (from an earlier term or a student who had previously completed the course) is strictly prohibited.

LABORATORY REPORTS

Your grade in this course primarily depends upon the laboratory reports you submit for the individual experiments. These reports are evaluated based upon (1) whether you have a complete data sheet; (2) whether you have correctly completed the data analysis and shown how you performed it; and (3) the quality of your laboratory work (e.g., the percent yield for a synthesis or how accurately you obtained the value for an unknown). Below are some guidelines and hints to help you prepare the best possible reports.

Bring your prelab calculations, to refer to as you do the data analysis.

Most frequently, points are deducted on data sheets because some data is either missing, not properly labeled (including units), or recorded with the wrong number of significant figures.

In the data analysis section you should always show ONE example of each type of calculation. This should consist of the formula used, followed by the formula with the number plugged in (including proper units), and finally the answer (with proper units and significant figures).

A common place where it is easy to be sloppy is in labeling graphs. Each axis should be labeled with what is plotted AND the proper units. For example: mass of solution (g). It is lazy, and often ambiguous, to simply put the units. Finally, each graph should be titled.

LABORATORY SAFETY RULES

You are responsible for observing the safety rules described below, as well as generally behaving in a responsible manner. Failure to follow these or other instructions (endangering yourself or others) may result in penalties ranging from point deductions up to and including expulsion from the course, resulting in a grade of E.

LABORATORY HOUSEKEEPING RULES

The laboratory will be left clean. All paper towels will be picked up and thrown away. The balance area will be clean, with no chemicals spilled on the floor, counters, or balances. If the lab is not clean at the end of the period, this is evidence of poor laboratory technique and safety considerations on the part of the entire class. If this is a problem, the instructor may choose to deduct points from the scores of all students in the offending section.

LABORATORY EQUIPMENT

All of the equipment that you will need for each experiment should be available in the drawers at your workstation.

CHEM 122: At each station the upper-left drawer contains basic glassware that will be shared by the students in all of the CHEM 122 sections. These drawers will be used in every CHEM 122 experiment.

Let the instructor know at the beginning of the lab period if your drawer was left a mess with equipment dirty or missing. The instructor will be able to find out who last used the drawer. Taking care of your equipment and keeping your glassware clean is part of good laboratory technique. Poor lab technique may result in

points being deducted from your lab grade (as well as charges for broken equipment in extreme cases).

CHEM 124: Each pair of CHEM 124 student will be assigned their own individual drawer containing basic glassware (since most CHEM 124 experiments are done with a partner). These drawers are NOT shared with students in other sections. CHEM 124 students can store their goggles in their own personal drawer, if they wish.

However, there are some drawers containing pipets and volumetric flasks that are shared by the students in all of the CHEM 124 sections (since it would be very expensive to stock these items in each CHEM 124 drawer). ***So, please return all pipets and volumetric flasks to these special equipment drawers so that students in other sections will have access to them.*** *Points may be deducted if these items are not returned to the special equipment drawer and they are found in individual students' drawers.* These special equipment drawers are kept locked and they will be opened only when needed.

At the end of the laboratory period the shared equipment drawer that you used will be checked by the laboratory assistant. If everything is clean, present, and has been properly put away, the assistant will sign your lab report at the top on the line labeled *Station Checked & Approved*. If this line is not signed, points may be deducted from your report score.

CHEM 122 and 124: If you accidentally break a piece of glassware, notify the instructor or laboratory assistant and they will get a replacement piece for you. Part of your program fee includes a modest breakage allowance to cover the occasional broken small item.

SAFETY RULES - EMU Chemistry Labs

EYE PROTECTION. Full coverage, splash-proof safety goggles must be worn at all times when you are in the laboratory, unless the instructor states they are not required. If you get chemicals in your eyes, **YELL FOR HELP** in getting to the eyewash. Wash your goggles off before removing them, and then flush the eyes with water for 20 minutes while forcing the eyes open, and rolling the eyeballs. Contact lenses should not be handled while in lab. In the event of an emergency requiring the use of an eyewash or safety shower, do not remove contacts until after washing your goggles and eyes, as described above.

APPROPRIATE ATTIRE. Minimizing exposure of bare skin is always prudent practice in a chemistry laboratory, so wearing a lab coat or apron is highly recommended. Long sleeve shirts and full-length trousers are also highly recommended. Open-toed shoes or sandals are NOT permitted in the lab and *failure to follow this rule will result in the student being prohibited from working until the condition is corrected*. Do not wear jewelry that can catch on equipment or be damaged by chemical fumes or spills. Confine long hair, and loose sleeves, neckties, and scarves when working.

GLOVES. Wear appropriate gloves when working with hazardous liquids, solids, or solutions.

WORK SAFELY. Never work alone or remove chemicals from the lab without prior authorization. Keep chemicals and equipment away from the edges of lab benches. Avoid unnecessary hazards by keeping drawers and cabinet doors closed while working. When moving about the lab, move carefully and anticipate the movements of others (e.g., backing up).

FLAMMABLE SOLVENTS. Never use an open flame in the vicinity of flammable solvents.

UNAUTHORIZED EXPERIMENTS. Never carry out unauthorized, unplanned, or unscheduled experiments. Discuss any unusual work with your instructor prior to doing it.

ACCIDENTS AND INJURIES. Report all accidents to your instructor immediately. **FOR EMERGENCIES dial 911** on any EMU phone or **487-1222** on a cell phone to connect to the Department of Public Safety. If 911 is called from your cell phone, the operator will request your location and then transfer you to DPS.

SPILLS. Consult your instructor for proper disposal procedures. Clean up all chemical spills immediately.

CHEMICAL CONTACT. If chemicals contact your skin, wash the affected area with water for 15 minutes.

WASTE DISPOSAL. Do not throw waste in the sink or in the trash baskets unless explicitly told to do so. Always heed the written instructions, or consult your instructor, for the proper disposal procedure.

EATING. Never eat, drink or taste anything (food or chemicals) while in the lab. Don't place fingers, pencils, pipets, etc. in your mouth. Do not chew gum or tobacco and do not apply cosmetics in the lab. Tobacco and cosmetics, in open containers, can absorb chemical vapors.

SMIFF TESTS. Do not test odors by direct inhalation from the container.

CLEAN UP. Wash your hands (and arms) thoroughly with soap and water before leaving lab.

SPECIAL SAFETY INSTRUCTIONS. Heed any special safety concerns in each experiment.

LOCATE THE SAFETY EQUIPMENT. On the first day of lab, locate the **safety shower, eye wash, fire extinguisher, fire blanket, nearest emergency exit, and emergency telephone**. Your instructor will describe the procedures for use of this equipment.

SAFETY DATA SHEETS (SDS). Manufacturers make safety data sheets available for the chemicals that they produce. You have a "right to know" all safety information in those sheets. Almost all SDS are available online, but viewing can also be requested in the Chemistry Department Office, room 541.

REPORT VIOLATIONS OF THE SAFETY RULES TO THE INSTRUCTOR.

ACADEMIC HONESTY POLICY

Education involves the search for truth. Therefore, honesty and personal integrity are values highly esteemed by the academic community. They are ingredients essential to the cooperation and communication among students and faculty needed for progress. The following honesty policy is intended to clarify the College's expectations for its students and to provide guidance in specific situations.

A. Definitions of Cheating: Cheating includes but is not limited to the following:

1. Unless specifically told otherwise by the instructor, examinations, tests, papers, laboratory reports, computer programs, and graded homework assignments are to be completed independently by each student. Looking at another person's paper or communicating with another person while working on an examination, test, laboratory report, computer program, or graded homework assignment is cheating.
2. Unless specifically told otherwise by the instructor, having books, notes, written material, or any means of accessing anything other than what is specified by the instructor readily available during an examination is considered cheating.
3. Obtaining or distributing exams in advance of their use is considered cheating.
4. It is cheating to represent as your own anything obtained from published materials or from another person. All source material must be appropriately acknowledged. Directions for proper acknowledgement of sources can be acquired in ENG 121 or found in the MLA Style Sheet, The Chicago Manual of Style Book and other style guides for specific disciplines.
5. To allow another to represent your words or ideas as his/her own is cheating.
6. To use work from one class for another without prior approval of your instructor is cheating.

B. Penalties for Cheating

The cheating penalties will range from a minimum of receiving a zero grade on the experiment, computer program, report, paper, performance, project, examination, or test involved to a maximum of both receiving an E grade for the course in which cheating occurred and reporting of the incident to the Department Head and Dean of Students for possible further disciplinary action including suspension or dismissal from the University.

C. Appeals

A student who has been found by his/her instructor to have engaged in cheating in a course may appeal the final grade received in that course. The appeal shall be made in accordance with Eastern Michigan University's "Grade Grievance Procedure" which is available from the relevant academic department office.

In situations where cheating incidents are also referred to the Department and Office of Student Conduct and Community Standards for possible disciplinary action, all proceedings and appeals shall be conducted in accordance with Eastern Michigan University's "Student Conduct Code and Judicial Structure" which is available online as part of the Board Policy Manual.

STUDENT SIGNATURE FORM

ACADEMIC HONESTY and LABORATORY SAFETY

I have read the **ACADEMIC HONESTY POLICY**. I understand the Policy and will abide by it.

I have read the **SAFETY RULES** for Eastern Michigan University Chemistry Labs. I understand and will observe these rules. I understand that I am responsible for conducting myself in a safe manner, becoming aware of and informed about special hazards of technique, apparatus or chemicals in the chemical laboratory, and will conform to any additional safety instructions presented orally or in writing by the instructor or contained in posted instructions or safety memoranda that are distributed.

I am aware that I have a "right to know" all safety information contained in the Safety Data Sheet (SDS) for any chemical used in this course. I can obtain this information by requesting a copy of the SDS from the main departmental office in Room 541 Science Complex.

Signature: _____

Date: _____

Print Name: _____

Course Number: _____

EMU Student Number: _____

This form must be signed and turned in to the instructor before you may begin work in the laboratory.