

GENERAL INFORMATION FOR STUDENTS IN QUANTITATIVE ANALYSIS

Safety Glasses:

Glasses must be worn at all times while in the laboratory. Safety glasses may be purchased at the bookstore.

Shoes:

Shoes must be worn at all times in the laboratory.

Laboratory Notebook:

The laboratory notebook must be cloth bound. A spiral bound notebook is not acceptable. Your instructor will show you the specific notebook to obtain. Any notebook unlike the one shown must be approved by the instructor.

Maintaining The Laboratory Notebook:

See Appendix A! 1 for instruction on notebook maintenance.

Balance Assignment:

An analytical balance is assigned to each student during the second laboratory period. *Use only the balance to which you were assigned.* You are responsible to see that the balance and the area around the balance is always kept **CLEAN**.

Laboratory Attendance:

The laboratory is open and under supervision from 12:50 - 5:20 p.m. on days lab is scheduled to meet. It is normally open at 8:00 a.m. and closed at 4:30 p.m. on days lab is not scheduled except on Friday when the lab will close at 1:00 p.m. Your instructor may vary this schedule somewhat. You are expected to attend laboratory at the scheduled time, although work may be performed during the additional times as needed. To make the most efficient use of your time in the laboratory, you are requested to do calculations and other paperwork outside the laboratory room.

Care of the Laboratory:

You are expected to assist in keeping the laboratory clean. Not only should you clean up after yourself, but, if your work space is dirty when you arrive at the laboratory, you are expected to clean up before you begin your work.

If you spill chemicals or other material in the balance itself, you should immediately sweep out the contaminant with a brush before proceeding. If you find the balance dirty, clean it before use. The excuse that someone else is responsible for the dirt is *never* acceptable in a scientific laboratory.

Any spilled reagents on or around the Reagent Shelf must be cleaned up immediately. You may need to ask the instructor about proper disposal procedures for reagents you know to be toxic. Sample papers used in rough weighing go into the trash can.

Each student is required to wash their work space at the end of each laboratory period. This includes the desk top and the shelf at the back of the desk. Keep track of time to allow sufficient time to clean up.

Cleaning of Equipment:

Care must be taken that glass and porcelain ware are thoroughly clean before use. *You must provide your own soap and towels.* After thorough cleaning, glassware must be thoroughly rinsed with tap water followed by a rinse with several small portions of deionized water. Glassware is clean if it shows a uniform and unbroken wetting on its inner surfaces. The wash bottle can be inverted for quick and easy rinsing of glassware. The deionized water tap is located at the east wall in the side lab. Glassware seldom needs drying before use. Drying of glassware should, in fact, be discouraged since that may be a source of contamination.

Care of the Buret:

Extreme care should be exercised when handling the buret as it will easily break. Even something as small as a chipped tip will prevent the buret from being acceptable when you try to return it at the end of the semester. The buret may first be cleaned with cold or hot soapy water, however, do not pour solid soap powder into the buret as it will clog the tip. If water breaks persist after rinsing, a buret brush may be used. Be careful, however, that the inside of the barrel does not get scratched. Finally, rinse with deionized water. Once the buret is clean, it should not have to be recleaned with soap for several weeks. Never let a solution other than water, no matter how dilute, stand in the buret for any length of time when it is not being used. Always rinse the buret after each use with distilled water, and store it filled with distilled water. The buret can be capped with a small cork to retain the water and stored upside down. If a buret with a teflon[®] stopcock is broken, return the teflon unit with all parts to the stockroom for credit.

Primary Standards and Analytical Samples:

All primary standards and unknown analytical samples are given to you in numbered vials. When obtaining a sample, immediately remove the sample sticker and place it in your notebook for a permanent record. The unknown cannot be graded without its number and the instructor does not keep a record of the sample you received. Save the vials until the end of the semester when they will be collected.

Drying and Weighing Samples:

The drying ovens in the laboratory are set between 110°C and 125°C and should be used *only* for drying samples, though one oven may be designated for drying glassware. The best procedure for drying samples is to place a small piece of paper with your name and locker number written on it into an evaporating dish. Tilt the vial containing sample and tap it to allow more surface to be exposed. Lay the open vial in the evaporation dish and place both in the oven for the designated time.

Procedure For Reporting Results:

Submit one completed Report Sheet for the designated experiment to which is stapled or clipped a **3 x 5 card** in the upper left-hand corner. **The Report Sheets must be completed in blue or black ink and submitted to the instructor.** The 3 x 5 card should have the your **name**, **locker number** and **the name of the analysis**. There should **not** be a sample number, a calculation or the analysis results on the card.

On the Report Sheets, circle the trials that were used to obtain the reported average answer. Ordinarily, the average of three or four results is recommended but not required. Explain, in your laboratory notebook, how the result to be graded was obtained. At the bottom or on the back

of the Report Sheet, complete **one** sample calculation which must include the mathematical equation used to calculate the experimental result. The equation should include all experimental data used in the calculation. **Failure to submit a report by the designated deadline will result in a 5% penalty.**

Your report will be graded and filed in your permanent file. The grade you received for an analysis will be recorded on the 3 x 5 card and returned to you the following day. Grades for analyses are based on 100, and a grade less than 100 indicates the closeness of your result to the correct result. A "zero" indicates a relatively large, but possible error. The tolerance is small where high accuracy is possible and large where it is not. A "no" indicates that the reported result is outside the range which can possibly be due to random experimental error. It is your responsibility to check calculations for errors since the instructor will not usually do so.

If you should find that a mathematical error has been made or that an incorrect equation was used, indicate the error and its correction to the instructor. If the recalculation is approved, a new report may be submitted. Fill out a Report Sheet, circle the error, and write "RECALCULATION" at the top. Submit it along with a new 3 x 5 card. Recalculated reports are penalized 5% from the new grade.

Procedure For Repeating Determinations:

If you receive a low grade, you may repeat the determination **once** but no more, and you must *first obtain a new sample*. You should indicate when a determination is being repeated by writing "REPEAT" at the top of the Report submitted. Repeated determinations are penalized 10% from the new grade. You will retain the higher grade after a repeat or recalculation.