The Hashemite University

The Faculty of Pharmaceutical Science

Jordan - Zarqa

Laboratory Manual

Course code: 1917011334

Course Name: Physical pharmacy lab

Prepared by: **Dr. Areen AlShweiat** **Dr. Nizar Al-Zoubi**

Updated by: **Msc. Mai Jaber, Dr. Israa Dmour, M.Sc. Eqbal abualkebash,**

Preface

There are a lot of rules and guidelines that accompany working in a laboratory, as there are chemicals and equipments that can be dangerous if handled improperly. Thus:

1. Beware of the specific hazards and protect yourself accordingly;
2. Think about the exercises as you are doing them, and learn the techniques and principles behind them;
3. Have fun! A lab is a refreshing change from the class room, where you have an opportunity to observe concepts in action, rather than just being told how they work.

COURSE OBJECTIVES

Upon completion of this laboratory course, the student should be able to perform the following objectives at the specified level:

1. Develop skills and techniques related to the actual use of equipment and instruments.
2. Demonstrate the effect of the physico-chemical properties phenomena on pharmaceutical systems.
3. Clarify theoretical concepts learned in physical pharmacy theoretical courses.
4. Be able to interpret scientific data and represent the data graphically
5. Be able to present and discuss the results and conclusions orally

Laboratory Safety Rules

The following rules are very important for your safety as well as the safety of other students**.**

Please read them carefully and follow them in each laboratory period.

A. Laboratory Safety

- Do not eat, drink or smoke in the laboratory
- Avoid rubbing your eyes during your work unless you know that your hands are clean
- If chemicals come into contact with your eyes or skin, wash immediately with water and consult your instructor
- Know where to find and how to use safety and first-aid equipment
- Learn the location and use of fire protection devices
- When in doubt, treat all chemicals as hazardous, until you get familiar with their properties. Consult the Material Safety Data Sheets (MSDS) or Merck Index or your Lab instructor
- Perform all reactions producing gases or unpleasant odor in the fume hood
- Wear a white lab coat to protect your clothing
- Never taste anything. Never directly smell the source of any vapor
- Never point a test tube during heating toward yourself or your neighbor
- Do not perform any chemical test without being instructed
- In case of an accident notify your instructor immediately
- Clean up all broken glassware immediately
- Always pour acids into water and not vice versa
- Do not use flammable reagents (alcohol, acetone, and others) near open flame
- Do not put a sealed container over any heat source, as it may explode
- If you are not sure how to use something ask your lab instructor
- Observe all special precautions maintained in the experimental procedures
- Do not work alone, always work in the presence of the laboratory instructor

B. Instructions for Laboratory Work:

- Read the experiment carefully before coming to the laboratory
- Perform your experiment with full attention to avoid accidents

Dealing with reagents and chemicals

- Never return any excess material from to the original stock bottle unless advised to do so by the instructor
- Read the warning label or consult the MSDS before using a chemical
- Read the label twice before removing any thing from the bench
- Never exchange the stoppers of different bottles
- Leave reagent bottles on the shelf where you found them
- When weighing, do not place chemicals directly on the balance
- Never return reagents to the reagent bottle. Dispose excess reagent in the waste bottle provided by your instructor
- Use only the amount of reagent specified in the procedure, avoid excesses
- Whenever instructed to use water, always use distilled water unless instructed to do otherwise

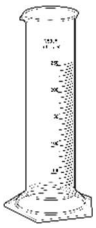
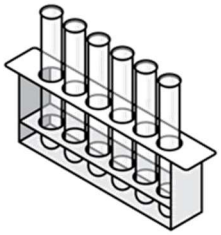
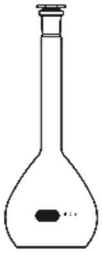
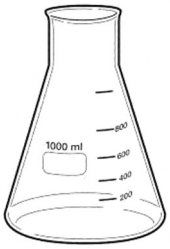
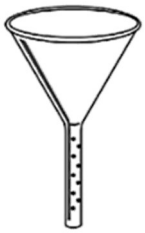
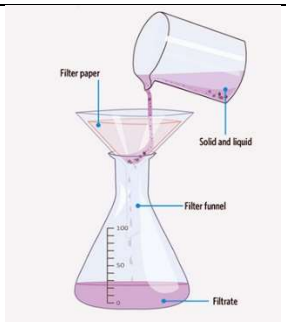
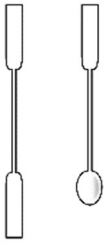
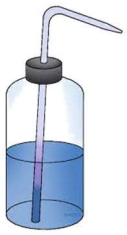
Dealing with wastes

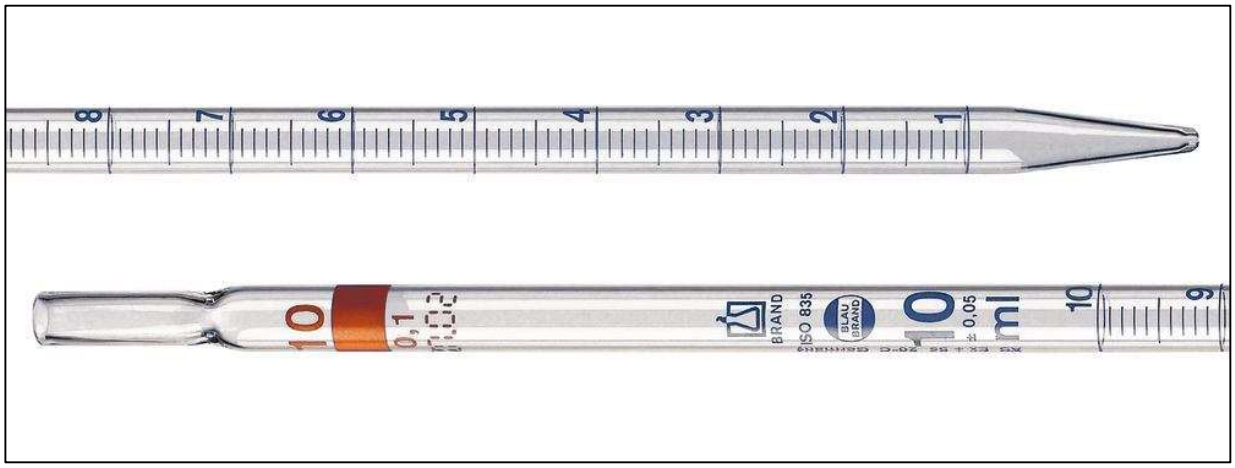
- Throw all solids and paper to be discarded into waste paper basket
- Never throw matches, filter paper, broken glass or any insoluble materials into the sinks.
- When disposing chemicals, avoid accidental mixing of incompatible chemicals such as acids and bases, flammables and toxics, flammables and oxidizers, oxidizers and reducers.

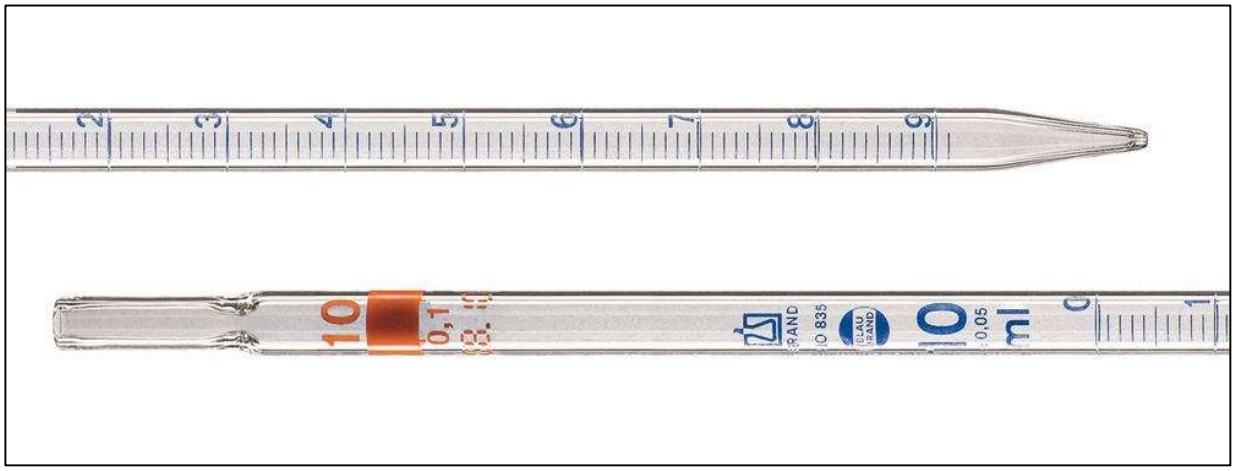
Dealing with the working area

- Keep your area clean
- Do not put hot objects on the desk top. Place them on a wire gauze or heat- resistant pad.
- At the end of each lab. Period leave your glass ware clean and dry on the top of your bench

Commonly used glass wares and lab tools

			
dropper	Graduated cylinder	Beaker	Test tube
			
Volumetric flask	Erlymer flask	funnal	Filtration unit
			
Burrit	Stand	Separatory funnal	Glass rod
			
Spatula	Weighting boat	Wash bottle	Volumetric pipette





Graduated pipette