



University Of Basrah  
College Of Pharmacy  
Department Of Pharmaceutical Chemistry



1<sup>st</sup> stage 1<sup>st</sup> Semester  
2022-2023

# LABORATORY OF ANALYTICAL CHEMISTRY



# Laboratory Safety Rules, Procedures and Regulation

## ❖ Introduction:

- **Laboratory safety rules are major aspect of every lab.**
- **Each student in lab must follow specific safety rules and procedures.**

## **Why is lab safety important?**

- **Lab safety rules and symbols are needed so that students do not injure themselves or their classmates.**

# Lab Safety Rules

**Rule1:-** Know the location of all lab safety equipment, including the fire extinguisher, fire blanket, first aid kit, safety shower and eyewash station.



**Rule2 :-** Wear safety goggles, lab coat, gloves, mask and covered shoes when working, they offer additional protection against heat, flames and chemicals splash or spill.



**Rule3 :-** All chemicals in the lab are considered dangerous. Do not touch, taste or smell any chemical unless specifically instructed to do so.

**-Never use mouth suction to fill a pipette.**

**Rule4 :-** Don't eat or drink in the laboratory.



**Rule5 :-** Check the label on chemical bottles before use.

**Rule6 :-** Take good care when transferring acids and other chemicals from one part of the lab to another.

## ❖ **Material Safety Data Sheets (MSDS):**

- **Include: Name of material,, Toxicity,, Storage,, Spill,, The first aid...**

**Chemicals Cabinet**



**Flammable Cabinet**



**Rule7 :- Report any accident (spill, breakage, etc.) or injury (cut, burn, etc.) to your supervisor.**

**Rule8 :- Be tidy while working, Keep your work area clean and free of unnecessary books, papers, coats, bags and equipment.**

**- When an experiment is completed, clean and return all equipment to its proper place as instructed by your supervisor.**



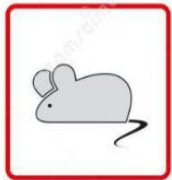
**Rule9 :-** Dispose the lab waste properly.



**Rule10 :-** Unplug all electrical sources for all devices after finishing work.



# Lab Safety Symbols (Signs)



Animal hazard



Sharp instrument hazard



Heat hazard



Glassware hazard



Corrosion



Environment



Chemical hazard



Electrical hazard



Eye & face hazard



Fire hazard



Health Hazard



Gas Cylinder



Biohazard



Laser radiation hazard



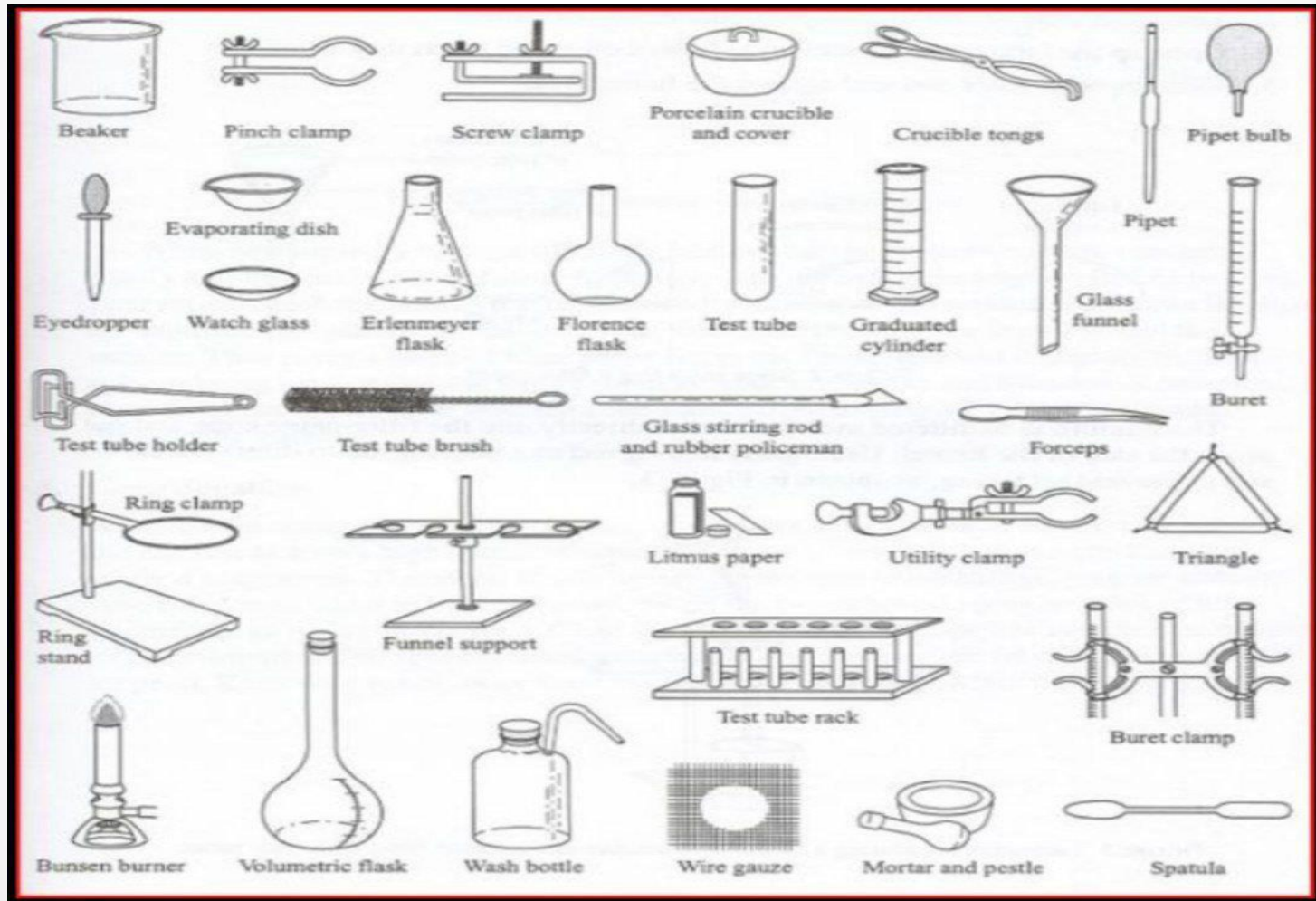
Radioactive hazard



Explosive hazard



# Laboratory Glassware and instruments



**Balance :** Used for measuring mass.



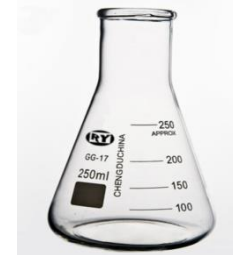
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**Beaker :** Used to hold, mix and heat liquids.



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**Conical flask :** Used for carrying out volumetric titrations, storage of liquids and mixing of solutions.



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**volumetric flask :** Used in the preparation of solutions.



**Burette** :Used to measure the volume of a liquid in titrations.

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**Graduated Cylinder** :Used to measure a precise volume of a liquid.

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**Funnel** :Used for separating solid substances from solution, use for filtering.



**Pipette** : Used to transport a measured volume of liquid.

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**Watch Glass** : Used to hold solids while they are being weighed or to cover beaker.

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**Stand and Clamp** : Used for hold lab glassware and other equipment in place.



# Laboratory of Analytical chemistry

## Name of experiments:

1-Neutralization titration ( acid-base titration).

a) Standardization of Hydrochloric acid (HCl) with standard Sodium Carbonate ( $\text{Na}_2\text{CO}_3$ ) solution .

b) Standardization of Sodium hydroxide (NaOH) with Hydrochloric acid (HCl).

c) Determination of percentage of Acetic acid in a Vinegar sample.

2-Precipitations titration.

3-Oxidation-redaction titration ( redox titration ).

4-Complexometric titration.

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## Steps of Report Writing

- **Name of experiment :- .....**
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- **Aim of experiment :- .....**
- **Date of experiment:-        /        /**
- **Name of students:**
- .....
- .....
- .....
- **Introduction**
- 
- **Chemicals**
- 
- **Tools**

- **Procedure**
- 
- **Result**
- 
- **Discussion for the result**
- 1-
- 2-
- 
- **General information**
- 
- **Reference**
- 

*Best wishes*

*Assistant Lecturer : Jumana N. Al-Hajeri*