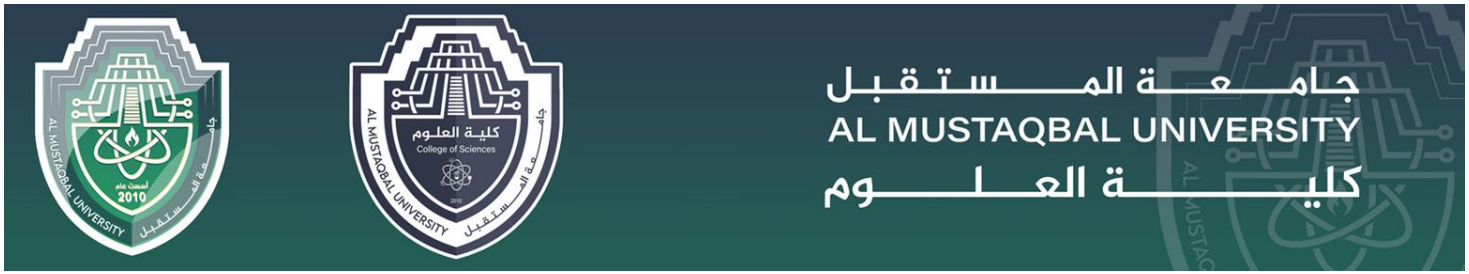
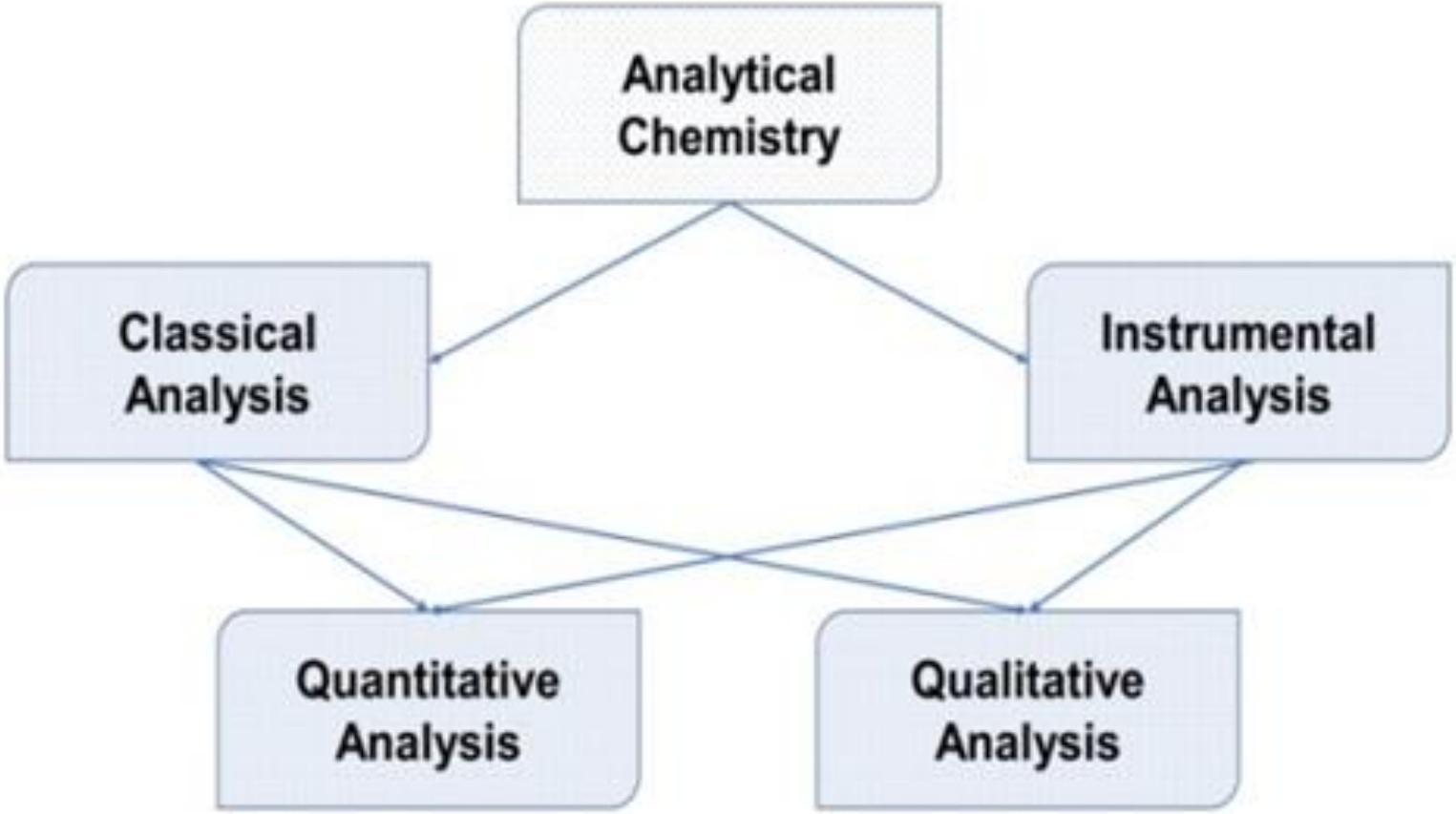


LAB Of Analytical Chemistry

1st Grade
Asst. Lect.Zahraa Hazim Hamid
Lecture 3: Introduction of Analytical Chemistry
Department of Medical Biotechnology

Introduction

- **Analytical chemistry :is the branch of chemistry focused on analyzing substances.**
- Analytical analysis is used to identify and quantify materials.
- Essential for science, industry, and everyday applications.


Analytical Chemistry
Classical Analysis
Instrumental Analysis
Quantitative Analysis
Qualitative Analysis

- A scientific approach to understanding the composition of substances.

Two main types:

1. **Qualitative Analysis**: Identifies the type of components.

2. **Quantitative Analysis**: Measures the quantity of components.

Qualitative Analysis

Identifies what elements, ions, or compounds are present in a sample.

Techniques include:

1. Precipitation reactions.
2. Flame tests.
3. Spectroscopy methods (e.g., UV-Vis, IR).

Quantitative Analysis

Determines the exact amount of each component in a sample.

Common methods:

1. Titration.
2. Gravimetric Analysis.
3. Instrumental techniques (e.g., Chromatography).

Techniques in Analytical Analysis

1. Classical Methods:

- Volumetric Analysis.
- Gravimetric Analysis.

2. Instrumental Methods:

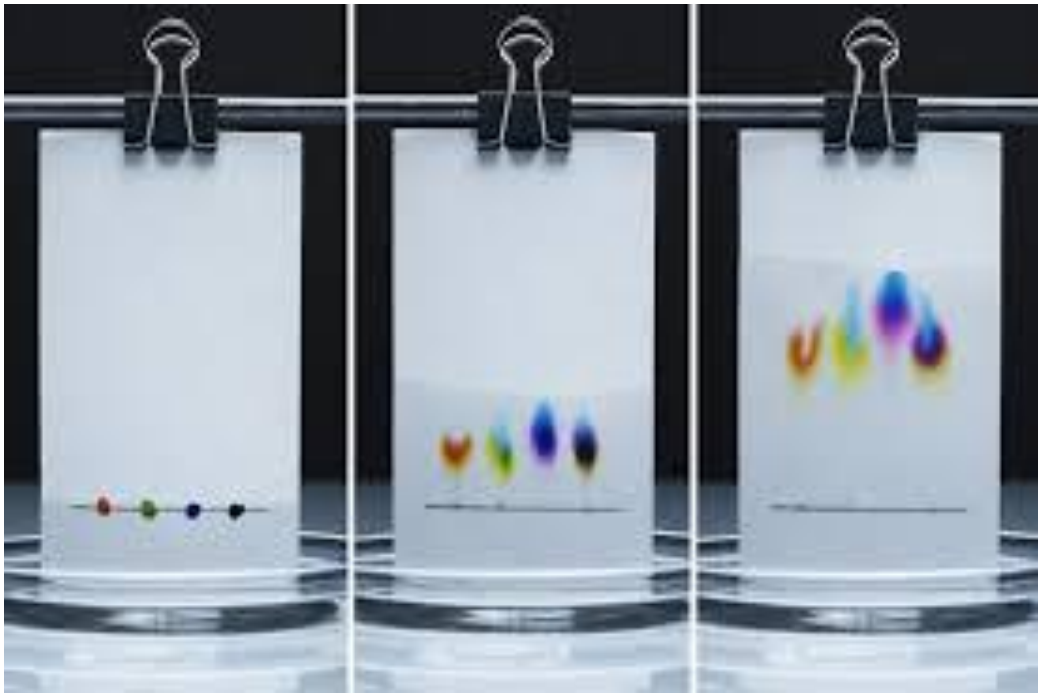
- Chromatography (HPLC, GC).
- Spectroscopy (UV-Vis, NMR, IR).

Classical Methods

- **Volumetric Analysis**: Measures volume of a reactant (e.g., titrations).
- **Gravimetric Analysis**: Determines mass of a substance.

Modern Instrumental Techniques

1. Chromatography



2. High-Performance Liquid Chromatography (HPLC).
3. Nuclear Magnetic Resonance (NMR).
4.Infrared (IR) and UV-Visible Spectroscopy