VALUE ADDED COURSE

IN

LAB TECHNIQUES IN CHEMICAL ANALYSIS

Course Objectives:

30 hrs.

1. Understanding the basic introduction of laboratories safety rules, studied about different reagents used in the laboratories and safety measures that have been taken while working in the laboratory.
2. To understand the preparation of standard solution in laboratory.
3. To understand the concept of gravimetric analysis and different basic processes like precipitation, digestion, filtration, drying, ignition and cooling.

Module-1 **(4 lectures/hrs.)**

Safety aspects in Chemical Laboratory; Emergency procedures; Safe handling and calibration of glassware; Safety in storage and handling of materials and precautions.

Module-2 **(6 lectures/hrs.)**

Mole concept and concentration- Normality, Molarity, Molality, Percentage (v/v,w/w,w/v), parts per million etc; preparation of solutions of solid and liquid compounds, standardization procedures and dilution; pH of solutions, preparation of buffer solutions.

Module-3 **(6 lectures/hrs.)**

Principles of qualitative and quantitative analysis- inorganic and organic mixtures, types of volumetric analysis, types of indicators, acid base titrations, iodometric and iodimetric titrations, complexometric titrations, gravimetric techniques and analysis procedure

Module-4 **(6 lectures/hrs.)**

Basic principle commonly used instruments- pH meter, conductometer, colorimeter, calibration, accuracy and precision, least count, measure of accuracy, precisions and errors.

Module-5 (Practical) **(8 lectures/hrs.)**

Practical based on following heads:

- Setting and assembling of apparatus
- Preparation of standard solutions and dilution
- Qualitative and quantitative analysis
- Calibration of instruments

Course learning outcomes:

After the completion of the course, the student should be able to:

1. Understand the basic introduction of laboratories safety rules.
2. To understand the preparation of standard solution, and basic working in the chemical laboratory.