TRAINING PROGRAM

Advanced Analytical Chemistry for Lab Professionals

Introduction:

The good and advance analytical laboratory can motivate dispirited teams of chemists and technicians to accomplish high quality work. It is very important for lab staff to learn how to create the success in their lab. Course is designed to provide an introduction and practical application of analytical chemistry in the laboratory. It is designed also to understand concepts of basic principle of analytical chemistry, how to develop technical, and methods in lab and how to evaluate the lab results.

Who Should Attend?

The course is of interest for Laboratory staff, Specialist, Shift Specialist, Senior Specialist, Shift Supervisor, Chemist, Shift Chemist

Methodology:

This interactive Training will be highly interactive, with opportunities to advance your opinions and ideas and will include;

- Lectures
- Workshop & Work Presentation
- Case Studies and Practical Exercise

- Videos and General Discussions

Certificate:

BTS attendance certificate will be issued to all attendees completing minimum of 80% of the total course duration

Course Objectives:

Upon the successful completion of this course, the participants will have an understanding of Principles and practices of the modern instrument's technique with different methods of calibration, standardization, and blank correction for analytical instruments.
to increase your skills through lecturers at the highest level of experience in the field of Statistical Analysis.

Course Outline:

- Introduction
- Chemistry Historical and review
- Matter; properties, states of matter and Measurements
- Atoms; Structure, Atomic wight (mass) & Elements
- Oxidation and burning of metals in Air
- Ions; Valency, Chemical Bonding
- Molecules and Compounds
- Gas laws and ideal gases
- Chemical Reaction
- Solution, Mixture, Compound, and Solvent
    - ❖ Standard Solution (Primary, Secondary, ...)
    - ❖ Preparation and dilution of standard Solution
    - ❖ Units for Expressing Concentration (Molar, Normal Solution, ppm, ppb,....)
    - ❖ Standard Reference Materials & CRM
- pH, Acid, Base, Neutral, Buffer Solution
- Organic Chemistry in Industry

- Sampling & Sample preparation
- Analytical Chemistry and Chemical Analysis
- Instrumental analysis in laboratory
- Spectroscopic Instrumental Analysis
    - ❖ Molecular Spectroscopy analysis
    - ❖ Atomic Spectroscopy analysis
- Separation Instrument Analysis
- Electrochemical Instrument analysis
- Comparing Instrumental Techniques
- Choosing the Right Instrument
- Instrumentals Calibration, and Standardization
- Instrumentals Safety Considerations
- Precision Equipment Handling/Storage
- Maintenance and troubleshooting in instrumental analysis
    - ❖ Routine Maintenance
    - ❖ Preventive Maintenance
    - ❖ Troubleshooting
    - ❖ Corrective and Preventive Action
- Chemical laboratory measurement evolution
    - ❖ Reporting results
    - ❖ The Evaluation of Results and Methods
    - ❖ Repeatability and Reproducibility
    - ❖ Detection limit (LOD, LOQ, LOL,…)
    - ❖ Error, Accuracy, Precision
    - ❖ Significant Figure Rules
    - ❖ Laboratory Certification
- Quality Control & Quality Assurance
- Measurement Uncertainly in testing and calibration
- Analysis methods validation
- Practical exercises for Inter-Laboratory Proficiency Testing