



AL099: Calibration, Maintenance and Troubleshooting of Laboratory Analytical Equipment





Training Description:

The growth of modern technology has confronted the analytical chemist with a host of new and increasingly complex materials, and has posed more stringent demands for greater sensitivity, reliability, and speed. On the other hand, developments in instrumentation have provided the analyst with new techniques, instruments, procedures, and reagents for dealing with these of equipment, reagents, and methodology has, however greatly complicated the task of the chemist searching for the best way of attacking a new or unfamiliar sample.

This intensive training course is intended to provide analytical chemists and their colleagues in related sciences with concise and convenient summaries of the fundamental data and the practical procedures that are most important and useful among the instrumental methods in analytical chemistry and be able to quantify the performance of analytical instruments, in particular with respect to the following:

- Estimating uncertainties in instrument
- Quantifying and demonstrating performance quality

With an appreciation of the limitations imposed by instrument design, leading to the interplay of the validation and qualification processes within quality assurance systems. This training course includes unique framework of topics covers the major instrumental techniques of spectrophotometers, chromatography, capillary electrophoresis and atomic emission spectroscopy. The use of case studies, exercises and practical applications, will help participants to develop a thorough understanding of the various concepts that underpin the different techniques.

Training Objectives:

By the end of the training, participants will be able to:

- ✓ Understand the various techniques of analytical measurements
- ✓ Give the principles of reliable laboratory measurements
- ✓ Outline key laboratory safety issues and safety measures
- ✓ Estimate uncertainties in instrument
- ✓ Be aware of the Instrument Performance Characteristics which include types and interaction between different characteristics
- ✓ Prepare and handle Sample for different Analytical Instrumentations
- ✓ Understand, use, maintain and troubleshoot of key laboratory equipment (Ultraviolet, Visible Spectrophotometers, Dosimeter, TVP analyzer, Densitometer, Viscometer, Infrared Spectroscopy, Electrolytic Conductance and pH, Gas Chromatography)

Training Designed for:

This course is intended for all chemical laboratory professionals, laboratory managers, Calibrations managers, superintendents, supervisors, engineers, chemists, analysts, technicians, laboratory maintenance staff.

Training Requirement:

“Hand’s on practical sessions, equipment and software will be applied during the course if required and as per the client’s request.” (This hands-on, highly-interactive training includes simulator, real-life case studies and exercises).





This training course is available upon request in English or Arabic. **Content, location and duration can be adapted to your specific wishes. It is therefore possible to focus on specific modules of the training course as per client's learning needs and objectives.** Further, it should be forwarded to us a month prior to the course dates.

Training Program:

DAY ONE:

- ❖ Pre-Assessment
- ❖ Introduction
- ❖ The laboratory and its purpose
- ❖ The laboratory environment
- ❖ Laboratory layout and construction
- ❖ Out-of-laboratory services, Electricity, ventilation, water, drains etc.
- ❖ Benches, hoods, sink
- ❖ Glassware
- ❖ Plastic ware

DAY TWO:

- ❖ Techniques of Analytical Measurements
- ❖ Instrumental Chemistry
- ❖ Principles of instrumental chemistry
- ❖ Balances
- ❖ Titration
- ❖ Colorimetry
- ❖ Atomic absorption
- ❖ Petroleum Laboratory equipment
 - Ultraviolet, Visible Spectrophotometers, Dosimeter, TVP analyzer, Densitometer, Viscometer, Infrared Spectroscopy, Electrolytic Conductance and pH, Gas Chromatography

DAY THREE:

- ❖ Calibration
- ❖ Uncertainty calculations
- ❖ Correlations
- ❖ Reference materials
- ❖ Correct laboratory techniques
- ❖ Statistical principles for Laboratory measurements
- ❖ Reporting of analytical results

DAY FOUR:

- ❖ Why is safety important?
- ❖ Safety Policy
- ❖ Laboratory Safety
- ❖ Handling of toxic and hazardous materials
- ❖ Spills and spill control
- ❖ Good laboratory practice

DAY FIVE:

- ❖ Material safety data sheets





- ❖ Emergency planning
- ❖ Handling of Compressed Gases (Cylinders)
- ❖ Destruction of hazardous chemicals in the laboratory
- ❖ Maintenance and troubleshooting of key laboratory equipments
- ❖ Course Conclusion
- ❖ POST-TEST and EVALUATION

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures, Concepts, Role Play
- 30% Workshops & Work Presentations, Techniques
- 20% Based on Case Studies & Practical Exercises
- 20% Videos, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Fees:

As per the course location - This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timing:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:30	Recess (Prayer Break/Lunch)
13:30 - 14:00	Last Session

For training registrations or in-house enquiries, please contact:

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