



# AL015:

## Modern Chemical Laboratory: *Operations, Equipment, Instruments, Quality & Safety*



## Training Description:

In today's highly competitive market environment, where fast and reliable laboratory results play an important role in decision making and process control, it is of paramount importance that laboratory personnel are adequately trained on the fundamental principles of laboratory operation.

This intensive training course will assist in keeping up to date with current laboratory operation principles and international guidelines, while at the same time stressing the importance of and providing valuable advice on the most critical areas of testing laboratories operation. These will include, but not be limited to, the areas of method development and method validation, environmental conditions, equipment maintenance and control, quality assurance of test results, measurement uncertainty and sample traceability, personnel training, internal audits, proactive / preventive actions and root cause analysis.

### Participants will develop the following competencies:

- Update their knowledge on modern laboratory operation
- Become aware of the latest developments in laboratory accreditation
- Develop their skills in providing an improved service to the customer
- Improve the competitive position of their laboratory in the market
- Help their organization to optimise their testing laboratory operation and activities

## Training Objectives:

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

- ✓ Define the role and objectives of their laboratory within an organization
- ✓ Understand the importance of quality control
- ✓ Develop their skills in method development and method validation
- ✓ Improve their skills in the area of equipment maintenance and operation
- ✓ Realize the need for data control and method documentation
- ✓ Understand the concept of traceability within laboratory activities
- ✓ Be able to raise Corrective / Preventive actions and subsequent root cause analysis
- ✓ Perfect their skills in conducting Internal Audits and Management Reviews

## Training Designed for:

This course is intended for a wide range of professionals employed in Chemical Laboratories, particularly those Laboratory Managers, Scientific Personnel of Laboratories, like Chemists, Chemical Engineers, Environmental Engineers, Process / Shift Engineers, Laboratory Technicians and newly recruited staff of chemical laboratories and Instrument Operators in chemical laboratories.

## Training Program:

### DAY ONE:

- ❖ PRE-TEST
- ❖ **Introduction to Modern Chemical Laboratory Operation**
  - Definition of chemical laboratory
  - Chemical laboratories as legal entities under different scenario
  - Inhouse laboratories operating within another organization
  - Independent commercial laboratories





- Reference laboratories vs. notified laboratories
- Independence and impartiality of laboratories / legal implications

#### DAY TWO:

##### ❖ Laboratory Location, Layout and Basic Safety Provisions

- Regulatory / legal / environmental requirements relating to laboratory location
- Laboratory Layout – *specific examples of different types of chemical laboratories*
- Basic rules relating to location of analytical instruments
- Health and safety considerations / emergency response team
- Chemicals handling and storage
- Ventilation and air conditioning requirements

#### DAY THREE:

##### ❖ Laboratory Instrumentation and Equipment

- Defining your needs in analytical equipment
- Selection criteria / Supplier evaluation
- Commissioning of analytical instruments
- Operator training and on-going competence
- Calibration of different types of analytical instruments
- External vs. internal calibration / Calibration standards

#### DAY FOUR:

##### ❖ Method Development

- In-house developed vs. Standard versus Rapid-screening methods
- Analytical method validation and verification
- Method documentation and assuring traceability – control of data
- Method Quality Control (QC) – use of reference materials (CRMs)
- Internal / external QC
- Introduction to Uncertainty of Measurement (UoM) / Legal implications

#### DAY FIVE:

##### ❖ Laboratory Accreditation

- Introduction to Laboratory Accreditation
- Management requirements of accreditation bodies
- Internal Audits
- Corrective / Preventive Actions – *root cause analysis*
- Management Reviews
- Technical requirements of accreditation, including sampling activities

##### ❖ Course Conclusion

##### ❖ POST-TEST and EVALUATION

### 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)





Please note that the below topics can be amended as per client's learning needs and objectives. Further, it should be forwarded to us 3 weeks prior to the course dates.

### Training Methodology:

The training course will combine presentations with instructor-guided interactive discussions between participants relating to their individual workplace. Practical exercises, video material and case studies aiming at stimulating these discussions and providing maximum benefit to the participants will support the training.

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

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, 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 01<sup>st</sup> 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 Timings:

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 - 15:00	Last Session

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

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Training & Career Development Department

