



# AL124: Laboratory Equipment and Facilities Operation Optimization and Safety

## Training Description:

This intensive course covers the need for ensuring consistent and high-quality products requires continuous measurements and control of processes. Much of this measurement takes place in laboratories through the use of standardized tests and methods. Similarly, the development of new products and processes often requires the use of laboratories and of course laboratory equipment. Understanding the principles of operation and the field of application of such equipment is very important for the laboratory operator and the researcher. But even the most sophisticated equipment is no guarantee for reliable results. The equipment operator must understand and employ the correct procedures for calibration, validation of methods and statistical treatment of measurement uncertainty. Of course, laboratories must also be safe places to work in as they often handle materials which are hazardous and toxic to the environment and to humans.

This course brings all these diverse elements close together and presents a complete picture of laboratory equipment selection, installation and operation.

## Training Objectives:

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

- ✓ Give the principles of operation of key laboratory equipment
- ✓ Give the principles of reliable laboratory measurements
- ✓ Understand the outline key laboratory safety issues and safety measures

## Training Designed for:

This course is intended for Research Directors Laboratory Managers, Laboratory Operators, Quality Managers, Laboratory Staff, Chemists, and Chemical Engineers.

## Training Program:

### DAY ONE:

- ❖ PRE-TEST
- ❖ Introduction
- ❖ The laboratory and its purpose
- ❖ The laboratory environment
- ❖ Types of equipment: an overview
- ❖ Laboratory layout and construction
- ❖ Out-of-laboratory services, electricity, ventilation, water, drains etc.
- ❖ Benches, hoods, sinks
- ❖ Glassware
- ❖ Plasticware



#### DAY TWO:

- ❖ Wet chemistry
- ❖ Instrumental chemistry
- ❖ Principles of instrumental chemistry
- ❖ Balances
- ❖ Titration
- ❖ Colorimetry
- ❖ Polarography
- ❖ Light absorption
- ❖ Atomic absorption
- ❖ Chromatography
- ❖ Petroleum laboratory equipment

#### DAY THREE:

- ❖ Calibration
- ❖ 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
- ❖ Material safety data sheets
- ❖ Emergency preparedness
- ❖ Emergency planning
- ❖ Handling of compressed gases (cylinders)
- ❖ Destruction of hazardous chemicals in the laboratory

#### DAY FIVE:

- ❖ Examples of calculations
- ❖ Exercises
- ❖ Course Conclusion
- ❖ POST-TEST and EVALUATION

### Training Requirements:

“Hands-on practical sessions, equipment and software will be applied during the course if required and as per the client’s request.”



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

### Training Methodology:

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 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 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:**

**Aisha Relativo:** [aisha@cmc-me.com](mailto:aisha@cmc-me.com)

Tel.: +971 2 665 3945 or +971 2 643 6653 | Mob.: +971 52 2954615

Training & Career Development Department