المركز الطبي الدولي
International Medical Center

**Metrology & Clean Room Technology** (A complete practical course)

In commemoration of world metrology day 2018 with the theme "Constant evolution of the International System of Units", the academy of the International Medical Center organizes a complete practical course called Metrology and Cleanroom Technology which will be held in IMC on 28-30 April 2018 in an effort to improve the national metrology infrastructure that is closely related to the improvement of quality and innovation to ensure health services quality. This theme was chosen because in relation to healthcare equipment and environment measurements used to ensure the quality of health services and environmental safety.

**First Day / 28th April -2018**

**Fundamentals of Bio Safety Cabinet Measurements (Workshop):**

**By Engr. Hani M. Bahaidara**

**Environmental Safety Engineer in International Medical Center**

**Associate Engineer from Saudi Council of Engineering and Calibration and QA Engineer**

This course presents information on the design, selection, function, specifications, and use of Bio Safety Cabinets (BSCs), which are the primary means of containment developed for working safely with infectious microorganisms. BSCs are designed to provide personnel, environmental and product protection when appropriate practices and procedures are followed. Three kinds of biological safety cabinets, designated as Class I, II and III. A BSC must be routinely inspected and tested by training personnel, following strict protocols, to verify that it is working properly. This process is referred to as certification of the cabinet and should be performed annually.

**Learning Objectives :**

- BSC Measurement Parameters
- How BSCs are constructed and function
- BSC types and exhaust requirements
- How to use BSCs effectively
- How to follow test procedures for BSC certification
- Developing a testing grid for BSCs

- Performing inflow and down flow airflow tests
- Evaluating BSC airflow using smoke pattern tests
- Conducting a site assessment
- Performing HEPA leak testing
- Determining when and how to decontaminate a BSC
- Troubleshooting BSCs
- Balancing BSC airflows
- Changing HEPA filters

**Outcome from Learning Objectives:**

- At the end of this session, you will be able to: -
- Identify the major parts of a  BSC
- Discuss general facts about BSCs
- List the factors that affect BSC airflow
- Biosafety Cabinet Certification
- Describe the viable and non viable particle counter test

**Agenda**

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|---|---|
| 4PM - 4:30 PM | Registration |
| 4:30 PM – 5:00 PM | Introduction to Metrology and Clean Room Technology |
| 5:00 PM- 5:15 PM | Break |
| 5:15 PM-6:00 PM | Fundamentals of Bio Safety Cabinet Measurements |
| 6:00 PM-7:00 PM | Break |
| 7:00 PM – 9:00 PM | Practical inspection and BSC testing |

**Audience**

- This course is designed for
- clinical and environmental engineers,
- food and drug factories engineers,

- healthcare facilities engineers,
- public health and clinical laboratory staff,
- environmental health officers ,
- Occupational health officers ,
- Safety professionals and persons interested in safe use of bio safety cabinets.

**Second Day / 29th April -2018**

**Applied Metrology in Environmental of Electrical Safety:**

**By Engr. Ahmed A. Qashgari**

**Board Member of Saudi Scientific Society of Biomedical Engineering**

**Master's Degree in biomedical engineering /General Manager of Drayaa Biomedical Services**

Working and Living with or near to a source of electricity can be extremely dangerous, making it essential for workers to have a good knowledge of how to work safely and protect themselves and others from harm.

This electrical safety training course has been designed to introduce learners to the subject and raise awareness of environmental of electrical safety in our life and working practices. The course aids your compliances with the Electricity at Work Regulations and ensures that learners are suitably trained in all electrical health and safety matters.

This course introduces the student to measurement concepts, electronics related to measurement instruments and math used in calibration. We will also teach various techniques used to make good measurements using calibration equipment

**Learning Objectives –**

- Electrical Measurement Parameters
- Understanding of basic meteorology
- Electrical Hazard Awareness
- Basic Safety Codes and Classifications
- Describe Earth Electrode Types

- Demonstrate the need of EST and other testing equipment's for safety purposes
- Future of Electrical Safety Testing
- Protection Devices at Critical Care Areas
- Why Hospitals need Isolated Power Systems?

**Outcome from Learning Objectives**

At the end of this session, you will be able to: -

- Increase the awareness of environmental of electrical safety
- Enhance the application in job duty
- Increase the efficiency in field
- Create business opportunity in electrical sector

**Agenda**

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|---|---|
| 4:00 PM – 4:30 PM | Introduction of Electrical Safety |
| 4:30 PM – 5:30 PM | Fundamentals of Meteorology |
| 5:30 PM – 6:30 PM | Applied Metrology of Electrical Safety Part 1 |
| 6:30 PM – 6:40 PM | Group Pictures |
| 6:40 PM -7:15 PM | Break |
| 7:15 PM – 9:30 PM | Applied Metrology of Electrical Safety Part 2 |

**Audience**

This course is suitable for workers of all levels, including managers, supervisors, full-time employees and part-time staff, who are required to work on or near electricity as part of their job role, and student. The course has been designed as an introduction to environmental of electrical safety and so no pre-requisite training is needed. Occupations that may find the training particularly useful include, but are not limited to:

- Electricians
- Technicians
- Communications engineers
- Power and energy suppliers and engineers
- Appliance repair workers
- Biomedical Engineers
- Safety engineers
- Clinical and environmental engineers
- Food and drug factories engineers
- Hhealthcare facilities engineers
- Safety professionals and persons interested in safe use of electrical equipment

**Third Day/ 30th April -2018**

**Cleanroom Technology (Workshop)**

**Mr. Walid Al Gamdy**

**Environmental Health Manager /Infection Control Department /King Abdulaziz Medical City /Ministry of National Guard/Master Degree in Environmental Science**

Cleanrooms are used in practically every operation where small particles can adversely affect the process in different sectors such as :

- Electronics Sector
- Energy Sector
- Engineering Sector
- Healthcare Sector
- Laboratory Sector
- Pharmaceutical Sector

**Learning Objectives :**

- Fundamentals of Design, Testing and Operation' as the syllabus of the course, which is as follows:

- Cleanrooms, their need, types and history

- Standards and information sources
- The design of cleanrooms and clean air devices
- Construction materials and surface finishes
- High efficiency air filtration
- Cleanroom testing and monitoring
- Measurement of air quantities and pressure differences
- Air movement control
- Filter installation leak testing
- Airborne particle and microbial counting
- Cleanroom disciplines
- Materials, equipment and machinery
- Cleanroom clothing, masks and gloves
- Cleaning a cleanroom

**Outcome from Learning Objectives:**

You will acquire comprehensive knowledge in 3 areas:

- Basic fundamentals of cleanroom technology
- Elements of cleanroom technology
- Specialization and practices

***Agenda***

| | |
|---|---|
| 4:00 PM – 4:45 PM | Cleanroom Metrology |
| 4:45 PM-5:00PM | Break |
| 5:00 PM- 5:45 PM | International Standards |
| 5:45 PM-6:00PM | PPE safe user procedures |
| 6:00 PM-7:00 PM | Break |
| 7:00 PM-8:00 PM | Practical Cleanroom testing |

**Audience**

- Suitable candidates for this course include:
- Any person in the organization who is directly involved in cleanroom,
- Personnel responsible for managing the cleanroom,
- Personnel who have responsibility for choosing the cleaning products for use within the cleanroom,
- Medical and medical technology
- Microelectronics ,
- Chemical and process engineering ,
- Pharmaceutical industry staff
- Architecture and civil engineering ,
- Food industry staff

Website: http://www.imc.med.sa/en