

COURSE OUTLINE

3- DAY TRAINING COURSE- MEASUREMENT UNCERTAINTY IN TESTING AND CALIBRATION

Course Title:

Measurement Uncertainty Course in Testing and Calibration (re. ISO/IEC 17025 & ISO 15189)

Course Dates:

17- 19th May 2010, 3 days.

Course Fees:

3000 Dhs per participant.

Course Venue:

Faza Hall, 2nd Floor Admin Building.
Dubai Central Laboratory Dubai Municipality
Zabeel Street, Al Karama.
Dubai.

Course Tutor:

Eng. Lina Mofleh Qudah is the former director of Dubai Accreditation Center, an approved ISO/IEC 17025, ISO/IEC17020 & ISO/IEC Guide 65 consultant, trainer and assessor, IRCA certified QMS 2000 auditor, approved UKAS QMS technical expert, and a Member of ILAC AIC & PTCG, IAF TC and ILAC/IAF JDSC.

Course Description:

This course provides the essential knowledge to persons who need to understand and to utilize the knowledge about the concept of measurement uncertainty in testing and calibration, including understanding the measurement system, identifying the sources of measurement uncertainty, quantifying the identified sources of uncertainty, combining the sources of uncertainty and to demonstrate how statements of uncertainty can be reported and how uncertainty may affect compliance with specifications.

Course Objectives:

This course is designed with the objectives to:

- Facilitate an understanding of the need for traceability of measurement to National Standards, its relevance to equipment/instrument readings with regard to testing and the ability to apply corrections.
- Facilitate an understanding of the types of uncertainty and how they are evaluated.

- Promote recognition of the different distributions (of data or uncertainty) that may be encountered during an estimation of uncertainty.
- Provide an appreciation of the need to quantify uncertainties in such a way that they can be combined to produce a meaningful combined uncertainty and to enable participants to calculate a combined uncertainty for a simple measurement.
- Enable participants to calculate the expanded uncertainty for a simple calibration.
- Facilitate an understanding of the need to know the test/measurement system in which the participants work.
- Consider the relationship between the method and the associated uncertainties.
- Introduce participants to the concept of correlation and explore ways of dealing with it.
- introduce participants to the strengths and limitations of the human factors influencing measurement uncertainty
- Apply the principles of uncertainty estimation with functionally related input uncertainties.
- Provide an opportunity to calculate an uncertainty budget and to distinguish between measurements used to estimate the mean of a population and those used to estimate the standard deviation of the population.
- Introduce the concept of using historical data to improve estimates of uncertainty.
- Enable participants to consider systematic approaches to linking and quantifying possible uncertainty contributions identified within a measurement system.
- enable participants to consider their own technical area to identify possible uncertainty contributions; to examine those contributions to see whether they can be (effectively) eliminated, whether they need to be monitored and controlled or could be included in repeatability/reproducibility considerations; where they can be linked; and how they might be quantified.
- Describe situations where a normal distribution cannot be assumed for the combined uncertainty.
- Demonstrate how the number of measurements made can affect the uncertainty associated with the result.
- Demonstrate how statements of uncertainty can be reported and how uncertainty may affect compliance with specifications.

Course Structure:

The course is interactive and requires class participation both as individuals and in teams. It consists of exercises, case studies, syndicate work and presentations so that the participant gets to understand, learn and implement the skills and techniques in practical situations. Participants are required to bring scientific calculators to the course.

Who Should Attend this Course?

This course is organized for laboratory managers, quality managers, technical managers, engineers, laboratory officers, consultants and accreditation bodies' staff or any personnel involved in the processes of accreditation in laboratories as per ISO/IEC 17025 and ISO 15189 (Medical Laboratories)

This course is targeted at those who have some testing and/or calibration experience and who require particular knowledge of measurement uncertainty in testing and calibration. The participants should have

appropriate technical and professional qualifications and recent experience in performance of testing/calibration methods in laboratories.

Course Certificate:

Certificate of Participation: Participants who attended the entire course and effectively participated will be awarded a Certificate of Participation approved by the course tutor and the course Organizers.

Other Important Information about the Training Course:

- In this training course contributions of all participants are required,
- Commitment to time schedule is very essential,
- Program is flexible in time and subjects; if any changes in time or subject are to be introduced these will be made upon the agreement of all participants,
- No individual cases/problems will be discussed during the training course; if any participant wants to discuss an individual problem he/ she should do it later with the course tutor after the training course, for the time interest,
- Lunch will be served between 12:30-13:30 hrs, tea and coffee will be served during two short half an hour breaks in the morning and afternoon sessions,
- Electronic copies of the course outline, program, power point presentations and DAC-G3-02 (which is an adoption of UKAS M3003 publication) in .pdf format will be provided to all participants prior to the course upon registration and payment of course fees.

References:

- UKAS M3003,
- ISO/IEC Guide 98-3: 2008,
- ISO/ IEC 17025: 2005,
- ISO 15189: 2007
- Materials distributed during the course.
- Publications available on relevant websites such as:
 - <http://www.ilac.org>
 - <http://www.european-accreditation.org>