Estimation of Uncertainty of Measurement – Analytical Measurements

Aim of Course

A four step approach will be presented as a means to estimating uncertainties in analytical (Chemical & Biological) measurements and is based on the philosophy of the ISO Guide to Uncertainties in Measurement (GUM). The target audience is laboratories who have any direct or indirect interest in analytical measurements. No prior knowledge with regard to estimating or calculating uncertainties is assumed.

Attendees are introduced to the concepts from the beginning and the course has a strong practical flavour Attendees are provided with the tools and skills needed to evaluate and estimate uncertainties in their own laboratories.

Whilst those planning to attend the NLA/CMETSA courses are recommended to bring their own calculators, in the case of this course a suitable statistical calculator is provided.

Pre-Requisites for attending this course

- Measurement System (Part 1 & 2)

Course Overview

- Specification of the analyte you want to measure in the matrix of the sample; as well as considering the method of analysis to be used.
- Identify the uncertainty sources. The participants will be introduced to the use of cause and effect diagrams (fishbone diagrams) for the consideration of all the uncertainty sources in a measurement.
- Quantify the uncertainty components. The course will include basic statistical tools required for the calculations associated with quantifying uncertainties. An introduction to type A and type B evaluation of uncertainties and the use of distribution functions to estimate type B uncertainties.
- Calculate the combined standard uncertainty and the expanded uncertainty through the propagation of uncertainties.

The course will also look at different approaches to method validation and the use of method validation data to estimate uncertainties.

Suitable examples covering a wide variety of analytical applications are included; enabling attendees to get a very good understanding of how they might implement this process in their own laboratories.

Who should attend

Chemical and Biological Testing Laboratory Personnel

Course Duration

5 Days

Evaluation

Daily tests and the passing of a final examination are required in order to successfully complete this course