

Introduction

Knowledge of the uncertainty of measurement of calibration and testing results is fundamentally important for laboratories, their customers and all institutions using these results for comparative purposes. Competent laboratories know their performance and the uncertainty associated with the results. Uncertainty of measurement is a very important measure of the quality of a result of a calibration or test method.

This course is intended to develop an understanding of uncertainty in calibrations & metrology (including Chemical testings). It helps participants to have an idea of evaluating and calculating uncertainty for laboratories. The participants would know how to develop initial estimates of uncertainty from currently available data as well as how to organize a strategy to systematically evaluate their own calibration and test results. It helps participants to understand the concept of the GUM in application to their calibration or testing.

Objectives

The students should accomplish the following objectives by the end of the course:

1. Understand the current application of measurement uncertainty for conformance to ISO/IEC 17025 requirements.
2. Identify international definitions and other terms used in scientific measurement for defining the estimation of uncertainty
3. Reasonable appreciation of the GUM (Guide to Uncertainty of Measurements) applications.
4. Identify the accreditation body requirements for determining expanded uncertainty of measurements.

Who Should Attend

Technical Managers, Quality Managers, Laboratory Managers, Supervisors, Signatories of calibration and test reports & certificates, Laboratory Quality Personnel.

Programme

Day 1

- Programme Overview
- Introduction to Uncertainty of Measurement
 - ISO/IEC 17025:2005 Requirements
 - Signatories Responsibilities
- History Pertaining to Measurement Uncertainty
 - Previous Estimating Methods
 - Measurement System
 - Measurement
 - SI System of Units
 - Measurement & Uncertainty of Measurement
- Estimating Measurement Uncertainty
 - Measurement Uncertainty
 - Source of Uncertainty
- Estimating Measurement Uncertainty (Cont.)
 - Nomenclatures & Definitions
 - Statistical Techniques Commonly Use in Estimating Measurement Uncertainty
 - Probability, Population & Normal Distribution
 - Mean, Standard Deviation and Variance
 - Repeatability & Reproducibility
 - Confidence Limits, Criterion of Detection and Limits of Detection
 - Degrees of freedom, Common Types of Distribution Charts
 - ESDM & Student's t-Distribution
 - Fitted Curves for Some Calibration works
 - Partial Differentiation

Day 2

- ISO Guide to the Expression of Uncertainty of Measurement (GUM)
 - General
 - Terms specific to ISO
- Applying the ISO Guide to Uncertainty Calculation
 - Practical considerations
 - Measurement Uncertainty Determination
 - Developing a model for determining measurement uncertainty
 - Establishing sources of uncertainty
 - Computing standard uncertainties, combined uncertainties, expanded uncertainties
 - Reporting results
 - Practical Guidance on Evaluating Uncertainty Components
- Practical Case Workshop
 - Participants will be guided by a step-by-step determination of all potential input quantities, standard uncertainties, combined uncertainties, expanded uncertainty & final reporting

Day 3

- Summary of Measurement Uncertainty Calculation
- Case study
- Summary of Concept
- Case study
- Discussion

Course Presenter

STEPHEN WONG – is a Certified Trainer by the Human Resource Department (HRD) of the Ministry of Human Resource, Malaysia. He is an excellent Quality Consultant, trainer and qualified Lead Assessor for both ISO 9000 and ISO/IEC 17025. He is also an effective management trainer. He holds a MBA degree (University of Wales, UK), Chemistry degree (University Malaya), Diploma in Marketing (CIM, UK) and Certified Diploma in Accounting & Finance (ACCA, UK). He has 34 years of management & training experience, including 24 years in quality training and consultancy.

He was a member (1991-2002) of the Malaysian National Accreditation Council of the Department of Standards Malaysia and still sits on three other national committees on Quality and Environmental in relation to ISO. Mr. Stephen Wong has been a key member of the TC 176 and TC 207 national committees responsible to CASCO for the development of the ISO 9001, ISO/IEC 17025 and ISO 14001 standards and other conformity assessment standards. He is also a member of the IATCA (now IPC) representing MRCA in the development of the ISO 19011 Auditing Standard for the ISO 9000 and the ISO 14000.

Registration Guidelines & Procedures

1. Early registration is encouraged. Participants shall be registered on a first-come-first-served basis.
2. Register by completing attached form and return by fax or e-mail.
3. Payment by crossed cheque / postal order made payable to WKS HOLDINGS SDN BHD together with registration form, to be received 4 days before course commence.
4. Notification of cancellation must be in writing received 4 working days prior to commencement of course (20% of course fee will be retained). Otherwise, full fee will still be charged.
5. Registration fee is inclusive of course materials, refreshments and lunch.
6. Closing date is 4 days before commencement of the course.

Registration form

Please register the following for the course on "Uncertainty of Measurement"

Name: _____

Designation: _____

Name: _____

Designation: _____

(please attached extra list if more than two participants)

Reminder: Participants need to bring a scientific calculator for this course.

Name & Address of Company: _____

Contact Person: _____

Designation: _____

Tel: No: _____ Fax: _____

E-mail: _____

I/We enclosed a cheque no: _____ amount to RM _____ made payable to WKS HOLDINGS SDN BHD.

Signature: _____

Date: _____

WKS reserves the right to cancel or postpone the course in the event of unforeseen circumstances.

WKS HOLDINGS SDN BHD (129630-A)
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UNCERTAINTY of MEASUREMENT

An Appreciation of the Guide to Uncertainty of Measurement (GUM) Applications to **Metrology and Chemical Testing**

Administrative Details

Date: 28 – 30 March 2017

Time: 0900 – 1715

Venue: Plaza Mayang, PJ

Fees: RM 1,250 per participant
HRDF Claimable

Organized & Management by

WKS HOLDINGS SDN BHD

