UNCERTINITY IN MEASURMENTS - TESTING

Uncertainty in measurements - Testing

Description

Program #: GQP-0002

Review and calculate specific examples for measurement uncertainty. Learn a practical approach to measurement uncertainty applications and understand the steps required, accepted practices, and the two practical types of uncertainties needed by competent accredited laboratories. Examples are relevant to testing laboratories. Learn a practical approach to measurement uncertainty applications. Focus on measurement uncertainty for testing laboratories and understand the steps required, accepted practices, and the types of uncertainties that need to be considered by accredited laboratories.

Who Should Attend ?

Laboratory management or technical staff responsible for the review of uncertainties and its calculations, assessors, and consultants for organizations seeking or maintaining accreditation to ISO/IEC 17025.

Prerequisites

- Basics of algebra
- It is recommended that attendees have had exposure to some uncertainty budgets and have a basic understanding of Microsoft Excel. Attendees are encouraged to bring their own examples.

Learning Objectives

- Examine international practices and practical statistics.
- Understand the need for measurement uncertainty
- Understand uncertainties and budgets
- Understand and calculate specific examples for measurement uncertainty

Outcomes

Known :

- the main concepts related to measurement results and measurement uncertainty, including their application to chemical analysis
- the main mathematical concepts and tools in uncertainty estimation
- the main measurement uncertainty sources in chemical analysis
- the main approaches for measurement uncertainty estimation

Able to :

- decide what data are needed for uncertainty estimation, understand the meaning of the available data and decide whether the available data are sufficient
- select the uncertainty estimation approach suitable for the available data
- quantify the uncertainty contributions of the relevant uncertainty sources using the available data
- carry out estimation of uncertainty using the main approaches of uncertainty estimation

Training Place

- In site training
- As NCV schedule

Duration

- 3 Days

Content

- Scientific Material (**Hardcopy**)
- Attendance Certificate from **NCV**

Language

- English

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Agenda

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Day 1

- Hand out Course Material
- Welcome, Introductions, Goal Setting
- Definitions, Key Documents, Acronyms
- Comments on Marketplace Uncertainty Software
- Expressing Measurements and Uncertainties
- Standard Notation/Scientific Notation/SI Units Plus Usage and Prefixes
- Significant Digits/Rounding Numbers/Exercises
- How NIST and the GUM Want Terms to be Used
- NIST 811 Guidance/Standard Deviations/Mean, Median, and Mode/Exercises
- Regression Analysis/Type A and Type B Factors
- What ISO/IEC 17025 Assessors Verify for Uncertainty Budgets
- Accreditation Scopes
- BMC/CMCs vs. MUs vs. Z-540 Uncertainties
- Categories of Calibration and Testing
- Uncertainty Budget Basics

Day 2

- Testing Uncertainty Guidance Documents/Categories
- Testing Laboratory Categories
- Review of CITAC Guide for Testing Uncertainties
- Chemical Testing MU Example and Exercises
- Mechanical Testing MU Example and Exercises
- More Analytical Testing MU Examples

Day 3

- Potential Uncertainty Factors in a Variety of Testing Scenarios
- Uncertainty Budget Math Examples and Exercises
- Exercise to Create an Uncertainty SOP
- Attendee Uncertainty Questions and Examples Reviewed
- Final Wrap-Up