

Training - Table of Contents

Metrology Training - Statistics for the Laboratory (Uncertainties)

GUM

Duration : 1 – 1,5 days

1. Regulatory context and summary of technical requirements, clause 5 of v2005:

- Purpose of measurement activity
- Summary of the principle of accreditation
- Introductory examples

2. General concepts of metrology and importance of the field

3. Definitions/principles

- Quantity
- Measurement
- Other fundamental definitions: accuracy, fidelity, correctness
- Types of measurements
- Measurement errors
- Calibration
- Uncertainties

4. Uncertainty calculations

- Types of uncertainties: A and B
- Type A calculations
- Type B calculations
- Combined uncertainty calculations

5. Reporting results

- How to round off
- Confidence interval and coverage factor
- Confidence interval for standard deviation
- Case of normal distribution

6. (Introduction) Statistical analysis of a measurement system (case of variables):

- Determine whether the variation due to the method (operator, device, method) is sufficiently small compared to the physical variation of the measured elements. Application to inter-laboratory comparisons and calibration.
- => Statistical tool: ANOVA: Analysis of variance, Sum of squares, Gage R&R