

Measurement Uncertainty For Clinical Laboratories Training Course

Eligible for use of SkillsFuture credit

Date: 3 - 4 Oct 2024

Time: 9.00AM - 5.00PM

Venue:

Health Sciences Authority
Recreation Room, Level 1
11 Outram Road, Singapore 169078
(2 minutes' walk from Outram Park MRT station)

Course fee: \$588.60 (inclusive of GST)

Bonus: Access to online self-learning course for 1 month at no additional fee

Organised by:



Who Should Attend

Technical staff of clinical laboratories, managers and others, who wish to gain knowledge, improve their understanding, or be able to apply the appropriate statistical tools in their evaluation of measurement uncertainty.

Please register at
<https://go.gov.sg/cmlclinicalmu>
or scan to register



Objectives

To enable the participants to understand fundamental concepts in statistics and basic tools used for data analysis in clinical laboratories; relevant parameters studied in method validation and the approaches to evaluating measurement uncertainty. Worked exercises and practice questions in the form of spreadsheets will be provided to reinforce concepts and to enable the participants to apply what they have learnt to their work.

Syllabus

- Descriptive statistics
- Outlier's test
- Significance tests
- Linear regression
- Fundamental principles of analytical method validation
- Performance parameters: selectivity, precision, bias, linearity, limit of detection and limit of quantification
- Measurement uncertainty and reasons for evaluating measurement uncertainty
- Bottom-up approach to evaluating uncertainty using ISO GUM measurement uncertainty principles
 - Specification of measurand
 - Identify sources of uncertainty
 - Quantify the components of uncertainty
 - Convert uncertainty data into standard uncertainties
 - Evaluate combined uncertainty and expanded uncertainty
- Top-down approach to evaluating uncertainty
 - Specification of measurand
 - Identify sources of uncertainty
 - Quantify precision using internal quality control data
 - Quantify bias using certified reference materials and external quality assurance data
 - Evaluate combined uncertainty and expanded uncertainty
- Report results and uncertainty
- Measurement uncertainty target/goal
- Application of measurement uncertainty to result interpretation

Course Trainers / Creators of Online Training Materials

Ms Cheow Pui Sze

Ms Cheow obtained her MSc (Chemistry) degree from the National University of Singapore in 2008. She is a Consultant Scientist and Team Leader of the Organic Chemistry Section in the Chemical Metrology Laboratory (CML), Health Sciences Authority (HSA). She also heads the Statistics Unit in HSA CML. Ms Cheow has over 10 years' experience in providing statistical training to scientists and technical officers in HSA, as well as local and overseas laboratories. She has also provided a number of consultancy services on statistics to testing laboratories. Ms Cheow serves as SAC-SINGLAS Technical Assessor and was also a member of a working group tasked to develop the SAC Technical Guide 4 – A Guide on Measurement Uncertainty in Medical Testing. She also contributed to the latest revision of the SAC Technical Guide 2 - A Guide on Measurement Uncertainty in Chemical & Microbiological Analysis. Ms Cheow is involved in the method validation and evaluation of measurement uncertainty in international and regional comparative studies participated by HSA CML and is also largely responsible for the implementation of statistical methods in proficiency testing programmes organised and certified reference materials produced by the laboratory. Ms Cheow's experience covers GC-MS, GC-FID/ECD, HPLC-DAD, HPLC-CAD, HPLC-MS, GC-MS/MS, ion chromatography, Karl Fischer coulometry, thermogravimetry and isotope dilution mass spectrometry.

Dr Benny Tong

Dr Tong received his PhD degree from the Nanyang Technological University in 2014. He is a Senior Scientist in HSA CML. He first joined the Inorganic Chemistry Section in 2015 and later joined the Organic Chemistry Section in 2019. He is also a SAC-SINGLAS Technical Assessor. Dr Tong has been involved in new method development and validation for the HSA CML, in which the methodologies were used in proficiency testing programmes and external quality assessment programmes organised for testing laboratories. Dr Tong has over 8 years' experience in providing statistical training to analysts in local and overseas laboratories. In the past years, he has been actively involved in performing method validation and evaluation of measurement uncertainty, organising/participating in international and regional comparative studies participated by the Laboratory. Dr Tong's experience covers isotope dilution mass spectrometry and standard additions techniques. He is experienced in various instrumentation such as ICP-MS, GC/LC-MS, TGA and NMR. Dr Tong is also interested in data analytics.

For further information, please email us at HSA_CML@hsa.gov.sg, or call 6775 1605 ext 125