

COURSE OVERVIEW LE0412 Measurement Traceability & Testing & Data Validation

Course Title

Measurement Traceability & Testing & Data Validation

Course Date/Venue

December 09-13, 2024/ Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Course Reference

LE0412

Course Duration/Credits

Five days/3.0 CEUs/30 PDHs AWA



Course Description



This practical and highly-interactive course includes practical sessions and exercises where participants will visit the laboratory and they will be introduced to various lab instruments and their calibration process. Practical sessions will be performed using one of the lab equipment in order to apply the theory learnt in the class.



This course is designed to provide participants with a detailed and an up-to-date overview of measurement traceability, testing and data validation. It covers the measurement principles and protocols for traceability in chemical analysis; the metrological traceability in laboratory; the traceability and analytical chemistry; the interlaboratory comparisons that can provide traceability; the total allowable error via metrological traceability to uncertainty of measurement of the unbiased result; the traceability in physical measurements and how to comparability achieve international for chemical measurements; and the key elements of traceability in chemical measurement.



Further, the course will also discuss the link to the SI via primary direct methods; the role of reference materials, measurement assurance concept in calibration; the traceability at NBS/NIST and the lifetime of the traceability chain in chemical measurement; proficiency evaluation as a traceability link in chemical metrology; achieving traceability in chemical measurement; the traceability issues in measurement; and the implementation of traceability.



















During this interactive course, participants will learn the improvements in efficiency of production and traceability for certification of reference materials; the traceability of measurement results of the effective acquisition time in gamma ray spectrometry implemented by the pulser method; the benefits of the implementation of a metrological structure for water analyses; the validation steps for traceability of linear calibrated chemical measurements; differentiate the traceability and uncertainty including their role in interlaboratory; the traceable property values, primary reference materials, traceability chain for gas composition, traceability to units and traceability without uncertainty; the role of reference materials in analytical chemistry; the ISO/IEC 17025 traceability requirements; and disseminating traceability in chemical measurement.

Course Objectives

Upon the successful completion of this course, each participant will be able to:-

- Apply and gain an in-depth knowledge on measurement traceability and testing and data validation
- Discuss the measurement principles and protocols for traceability in chemical analysis including the metrological traceability in laboratory as well as the traceability and analytical chemistry
- Identify interlaboratory comparisons that can provide traceability as well as describe total allowable error via metrological traceability to uncertainty of measurement of the unbiased result and practical considerations on the traceability to conventional scales
- Determine traceability of reference materials, traceability in physical measurements and how to achieve international comparability for chemical measurements
- Identify the key elements of traceability in chemical measurement and practical realization of the traceability of chemical measurements standards
- Review the link to the SI via primary direct methods, the role of reference materials, measurement assurance concept in calibration and traceability at NBS/NIST and the lifetime of the traceability chain in chemical measurement
- Apply proficiency evaluation as a traceability link in chemical metrology and achieve traceability in chemical measurement
- Analyze traceability issues in measurement
- Implement traceability, improve efficiency of production and traceability for certification of reference materials
- Recognize the traceability protocol to the SI by gravimetric analysis
- Identify the traceability in routine chemical measurements and the traceability of measurement results of the effective acquisition time in gamma ray spectrometry implemented by the pulser method
- List the benefits of the implementation of a metrological structure for water analyses
- Employ validation steps for traceability of linear calibrated chemical measurements
- Differentiate traceability and uncertainty including their role in interlaboratory, traceable property values, primary reference materials, traceability chain for gas composition, traceability to units and traceability without uncertainty
- Enumerate the role of reference materials in analytical chemistry as well as review ISO/IEC 17025 traceability requirements and disseminate traceability in chemical measurement

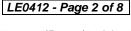




















Exclusive Smart Training Kit - H-STK®



Participants of this course will receive the exclusive "Haward Smart Training Kit" (H-STK®). The H-STK® consists of a comprehensive set of technical content which includes electronic version of the course materials, sample video clips of the instructor's actual lectures & practical sessions during the course conveniently saved in a Tablet PC.

Who Should Attend

This course provides an overview of all significant aspects and considerations of measurement traceability and testing and data validation for quality managers, quality professionals, laboratory managers, superintendents, supervisors, chemists, scientists, analysts and other technical staff.

Course Fee

US\$ 5,500 per Delegate + VAT. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Training Methodology

All our Courses are including Hands-on Practical Sessions using equipment, State-ofthe-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

30% Lectures

20% Practical Workshops & Work Presentations

30% Hands-on Practical Exercises & Case Studies

20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.





















Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations: -



The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the ANSI/IACET 2018-1 Standard which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET 2018-1 Standard.

Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking Continuing Education Units (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award 3.0 CEUs (Continuing Education Units) or 30 PDHs (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.



British Accreditation Council (BAC)

Haward Technology is accredited by the British Accreditation Council for Independent Further and Higher Education as an International Centre. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC. set by BAC.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

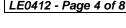


















This course will be conducted by the following instructor. However, we have the right to change the course instructor prior to the course date and inform participants accordingly:



Dr. lan Kaloudis, PhD, MSc, PGrad, BSc, is a Senior Analytical **Chemist** with almost **30 years** of extensive experience. His expertise widely covers in the areas of Chemical Analysis, Chemical Laboratory, Laboratory Management, Laboratory Supervision & Management, Analytical Laboratory Management, Analytical Laboratory: Management, Laboratory Consumables Management, Metrological Traceability, **Implementation** Traceability, Traceability of Units, Laboratory

Calibrations & Troubleshooting Techniques, Safety and Quality in Scientific Laboratory, Laboratory Skills, Pesticides Application, PAH, VOC, Advanced Oxidation Processes (AOP), Phenols, Cyanotoxins, Gas Chromatography (GC), Mass Spectrometry (MS), GC/MS Technology & Problem Solving, High Performance Liquid Chromatography (HPLC), HPLC-ICP-MS/ICP-MS, Analytical Instrumentation, Equipment, Safety & Quality (ISO 17025), Analytical Instrumentation for Laboratory, Analytical Chemistry, Analytical Laboratory Quality Management System, Waste Water Treatment, Elucidation of Mechanisms, Statistical Analysis of Data, Statistical Quality Control (SQC), Statistics Methods & Measurement Uncertainty, ISO 17025:2017, Food Safety and Environmental Management Systems. He is currently the Head of Organic Micropollutants Laboratory of Athens Water Supply and Sewerage Company wherein he is responsible for the development & validation for the determination of organic pollutants in water, research projects related to water quality and development of cyanotoxins analysis laboratory.

All throughout his career life, Dr. Kaloudis had occupied several challenging positions and dedication as **Quality Manager**, **Head of Industrial Waste Water Control Section**, **Consultant**, **Senior Researcher**, **Collaborating Researcher**, **Research Associate**, **Lecturer**, **Trainer** and **Auditor** for various companies such as the KEK DIASTASI - Hellenic Food Authority Training Programs, University of the West of Scotland, Institute of Nanoscience and Nanotechnology (INN), Hellenic Accreditation System (E.SY.D.), Institute of Physical Chemistry, Food Industrial Research and Technological Development Company and Athens Water Supply and Sewerage Company (EYDAP SA).

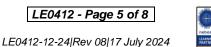
Dr. Kaloudis has a **PhD** degree in Chemistry (Honors) from the **National and Kapodistrian** University of Athens, a Master degree in Quality Management from the University of the West of Scotland, a Postgraduate Programme in Production Management & Quality Management from Technical Educational Institute (TEI) of Piraeus, a Bachelor degree in Chemistry (Honors) from National and Kapodistrian University of Athens. Further, he is a Certified Instructor/Trainer, a Certified ISO 17025:2017 Auditor, a Registered Food Safety and Hygiene Trainer, a Certified ISO 9001 Lead Auditor from International Register of Certificated Auditors (IRCA), a Certified Environmental Management Systems Auditor from Institute of Environmental Management and Assessment (IEMA), a member of the American Chemical Society (ACS), a senior member of the American Society for Quality (ASQ), a member of the International Water Association (IWA), a member of the European Water Platform, a member of the Hellenic Mass Spectrometry Society (HMSS), a member of the Italian Society of Toxicology and a member of the Association of Greek Chemists (AGC). He has further published numerous journals/books and delivered various trainings, seminars, conferences, workshops and courses globally.



















Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1: Monday 09th of December 2024

Monday 65 Of Describer 2024
Registration & Coffee
Welcome & Introduction
PRE-TEST
Measurement Principles for Traceability in Chemical Analysis
Protocols for Traceability in Chemical Analysis
Break
Metrological Traceability in Laboratory
Traceability & Analytical Chemistry
Do Interlaboratory Comparisons Provide Traceability?
Break
From Total Allowable Error via Metrological Traceability to
Uncertainty of Measurement of the Unbiased Result
Practical Considerations on the Traceability to Conventional
Scales
Recap
Lunch & End of Day One

Day 2: Tuesday 10th of December 2024

Duy L.	ruesday to St Describer 2024
0730 - 0830	Traceability of Reference Materials
0830 - 0930	What Can we Learn from Traceability in Physical Measurements?
0930 - 0945	Break
0945 - 1045	How to Achieve International Comparability for Chemical
	Measurements
1045 - 1145	The Key Elements of Traceability in Chemical Measurement
1145 – 1245	The Practical Realization of the Traceability of Chemical
	Measurements Standards
1245 - 1300	Break
1300 - 1345	Link to the SI via Primary Direct Methods
1345 - 1420	The Role of Reference Materials
1420 - 1430	Recap
1430	Lunch & End of Day Two

Day 3: Wednesday 11th of December 2024

Day o.	Wednesday II Of December 2024
0730 - 0830	The Measurement Assurance Concept in Calibration & Traceability
	at NBS/NIST
0830 - 0930	Lifetime of the Traceability Chain in Chemical Measurement
0930 - 0945	Break
0945 - 1045	Proficiency Evaluation as a Traceability Link in Chemical Metrology
1045 - 1145	Achieving Traceability in Chemical Measurement
1145 – 1245	Traceability Issues in Measurement
1245 - 1300	Break
1300 - 1345	Implementation of Traceability
1345 – 1420	Improvements in Efficiency of Production & Traceability for
	Certification of Reference Materials

















1420 - 1430	Recap
1430	Lunch & End of Day Three

Day 4: Thursday 12th of December 2024

Duy T.	Thursday 12 of December 2024
0730 - 0830	A Traceability Protocol to the SI by Gravimetric Analysis
0830 - 0930	Traceability in Routine Chemical Measurements
0930 - 0945	Break
0945 – 1045	Traceability of Measurement Results of the Effective Acquisition Time
	in Gamma-Ray Spectrometry Implemented by the Pulser Method
1045 – 1145	Benefits of the Implementation of a Metrological Structure for Water
	Analyses
1145 – 1245	Validation Steps for Traceability of Linear Calibrated Chemical
	Measurements
1245 - 1300	Break
1300 - 1345	Traceability & Uncertainty
1345 – 1420	Traceability & its Role in Interlaboratory Comparisons
1420 - 1430	Recap
1430	Lunch & End of Day Four

Day 5: Friday 13th of December 2024

Day o.	Triday to of December 2024
0730 - 0830	Traceable Property Values of In-House Reference Materials
0830 - 0930	Primary Reference Materials & Traceability Chain for Gas
	Composition
0930 - 0945	Break
0945 - 1015	Traceability to Units
1015 - 1045	Traceability Without Uncertainty
1045 - 1130	The Role of Reference Materials in Analytical Chemistry
1130 - 1230	Meeting ISO/IEC 17025 Traceability Requirements
1230 - 1245	Break
1245 - 1345	Disseminating Traceability in Chemical Measurement
1345 - 1400	Course Conclusion
1400 - 1415	POST-TEST
1415 - 1430	Presentation of Course Certificates
1430	Lunch & End of Course



















Practical Sessions/Lab Visit

Lab Site visit will be organized during the course for delegates to practice the theory learnt:-



Course Coordinator

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org

















