COURSE OVERVIEW LE0272
Chemical Selection and Testing

Course Title
Chemical Selection and Testing

Course Date/Venue
Session 1: May 12-16, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
Session 2: August 31-September 04, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Course Reference
LE0272

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

Course Description

This hands-on, highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.

Laboratories have a professional obligation to provide accurate and reliable analytical results to customers. The Laboratory should justify the customer's trust by providing the correct answer to the analytical part of the problem, in other words, results that have demonstrable 'fitness for purpose'. Analytical method validation is one of the measure universally recognized by laboratory as a necessity for a comprehensive system of quality assurance.

Method validation is the process that provides evidence that a given analytical method, when correctly applied, produces results that are fit for purpose. No matter how well a method performs elsewhere, analysts need to confirm that the method is valid when applied in their laboratory. There is now a much greater emphasis on method validation in the ISO/IEC 17025 accreditation standard. Through a number of workshops within this course, delegates build a validation protocol for a method of their choice.

This course is designed to provide participants with a detailed and an up-to-date overview of method validation for chemical testing. It covers the principles of uncertainty of measurement; the errors and uncertainties as well as measures of central tendency and measures of the spread of measurements; the various types of hypothesis testing and the concept of ANOVA; the basic principles of correlation and regression including the basic statistical analysis for chemical analysis; the process of method validation and documentation in accordance with ISO 17025; and the importance of ISO 17025 accreditation and proficiency testing (PT).

During this interactive course, participants will learn the method that require validation and the method validation parameters for chemistry analysis; the validation criteria that will satisfy the needs of customers; the method of validation by considering the proof of the performance of a method and/or assuring the quality of a measurement according to ISO 17025; the maintenance of validation by means of analysis of QC samples & CRMs, reproducibility studies and customer management; and the process of writing a method validation document by presenting some case studies and practical exercises to enhance knowledge and understanding of the subject.

Course Objectives

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

- Apply systematic techniques in method validation for chemical testing
- Discuss the principles of uncertainty of measurement
- Differentiate between errors and uncertainties as well as measures of central tendency and measures of the spread of measurements
- Describe the various types of hypothesis testing and the concept of ANOVA
- Explain basic principles of correlation and regression including the basic statistical analysis for chemical analysis
- Explain the process of method validation and documentation in accordance with ISO 17025
- Recognize the importance of ISO 17025 accreditation and proficiency testing (PT)
- Discuss why method validation is necessary, identify the method that require validation and determine method validation parameters for chemistry analysis
- Set validation criteria that will satisfy the needs of customers
- Recognize the method of validation by considering the proof of the performance of a method and/or assuring the quality of a measurement according to ISO 17025
- Perform maintenance of validation by means of analysis of QC samples & CRMs, reproducibility studies and customer management
- Demonstrate the process of writing a method validation document by presenting some case studies and practical exercises to enhance knowledge and understanding of the subject

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 conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides an overview of all significant aspects and considerations of method validation for chemical testing for laboratory managers, scientists doing measurements in test laboratories, chemists and other technical staff.

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-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 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.

Accommodation

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

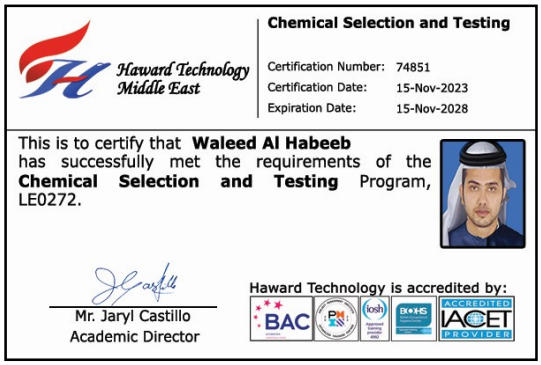
Course Certificate(s)

(1) Internationally recognized Competency Certificates and Plastic Wallet Cards will be issued to participants who completed a minimum of 80% of the total tuition hours and successfully passed the exam at the end of the course. Certificates are valid for 5 years.

Recertification is FOC for a Lifetime.

Sample of Certificates

The following are samples of the certificates that will be awarded to course participants:-



(2) Official Transcript of Records will be provided to the successful delegates with the equivalent number of ANSI/IACET accredited Continuing Education Units (CEUs) earned during the course.

Haward Technology Middle East

Continuing Professional Development (HTME-CPD)

CEU Official Transcript of Records

TOR Issuance Date: 15-Nov-23

HTME No. 74851

Participant Name: Waleed Al Habeeb

Program Ref.	Program Title	Program Date	No. of Contact Hours	CEU's
LE0272	Chemical Selection and Testing	November 11-15, 2023	30	3.0

Total No. of CEU's Earned as of TOR Issuance Date **3.0**

TRUE COPY

Jaryl Castillo
Academic Director

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

P.O. Box 26070, Abu Dhabi, United Arab Emirates | Tel.: +971 2 3091 714 | E-mail: info@haward.org | Website: www.haward.org

Certificates Accreditations

Certificates are accredited by the following international accreditation organizations:-

- 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.

- 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.

Course Instructor(s)

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

Dr. Yousef Al-Mashni, PhD, MSc, BSc, is an **International Expert** in **Analytical Laboratory** with over **30 years** of extensive experience. He is an **authority** in **Laboratory Equipment**, **Laboratory Quality Management Systems** (**ISO 17025** and **ISO 15189**), **Lab Safety & Health**, Good Laboratory Practice (**GLP**) and **Safety Procedure** in **Laboratories**. His wide expertise also covers **Water Analysis** & **Reporting**, **Water Sampling** & **Testing**, **Water Analyzer**, **Medical Laboratory Auditing**, **ISO 15489**, **Infection Control**, Internal **Quality Control** for **Microbiologists**, **Analytical Techniques**, **Biochemical**, **Hematological**, **Parasitological**, **Biochemical**, **Microbiological** & **Serological Analysis** of **Clinical Specimens**, **Helmith Ova** & **Salmonella** in **Waste Water** & **Sludge**, **Microbiological** Aspects & **Analysis** of **Wastewater**, Microbiology of **Wetlands**, Microbiological **Indoor Air Quality**, **Entrococcus**, **Pseudomonas** & **Aeromonas**, **Sulfate Reducing Bacteria**, **Fluorescense Microscopy**, **Planktology** of **Ambient Environment**, **Oral**, **Medical** & **Diagnostic Microbiology** and **Oral** & **Dental Hygiene**. Further, he is also well-versed in the areas of **Food Hygiene** and **HACCP**, **Food Safety**, **Food Poisoning**, **First Aid & CPR** and **Fire Safety**. He is currently the Deputy **Principal** & **Chief Technical Instructor** of **UNRWA** wherein he is responsible in developing and managing operations at the college/centre including building workshops and laboratories capacity, curriculum development and introducing new courses.

During his long career life, Dr. Yousef worked for many international companies handling key positions such as ICDL Centre **Manager**, **Deputy Principal**, **Chief Technical Instructor**, **Acting Principal**, **Laboratory Supervisor**, **Technical Instructor**, **Technical & Vocational Instructor**, **Senior Medical Laboratory Technician** and **Medical Laboratory Technician**.

Dr. Yousef has a **PhD** degree in **Natural Health Sciences** from the **University of Florida** (**USA**), **Master** degree in **Clinical Microbiology** and **Bachelor** degree **with Honours** in **Microbiology**. Further, he has **Diploma** in Vocational Education (**UNRWA & UNESCO**) and received several **certifications** like **ICDL** and Training of Trainers (**TOT**) in **Cambridge University** (**England**). He is a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**), a **Certified Instructor/Trainer** and an active **member** of **Jordan Medical Laboratories Society**, Technical **Accreditation Committee of Medical Laboratories** (**Jordan Institution & Metrology**) and the Technical **Accreditation Committee for Granting ISO 15189 Certificate**. Furthermore, he has also published numerous technical papers and books including **Medical & Diagnostic Microbiology**, **Practical Competencies in Medical Laboratory Technology**, **Safety in Medical Laboratory Science** and **Quality Control in Medical Laboratory Science** just to name a few.

Course Program

The following program is planned for this course. However, the course director(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

0730 - 0800	*Registration & Coffee*
0800 - 0815	*Welcome & Introduction*
0815 - 0830	***PRE-TEST***
0830 - 0930	***Basic Principles*** *The Difference Between Errors and Uncertainties ● Measures of Central Tendency Like the Mean*
0930 - 0945	*Break*
0945 - 1230	***Basic Principles (cont'd)*** *Measures of the Spread of Measurements like the Standard Deviation, Variance, RSD ● Populations and Samples*
1230 - 1245	*Break*
1245 - 1345	***Basic Principles (cont'd)*** *Confidence Limits and Confidence Intervals*
1345 - 1420	***Basic Principles (cont'd)*** *Hypothesis Testing*
1420 - 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 - 0830	***Basic Principles (cont'd)*** *Analysis of Variance (ANOVA)*
0830 - 0930	***Basic Principles (cont'd)*** *Basic Principles of Correlation and Regression*
0930 - 0945	*Break*
0945 - 1230	***Basic Principles (cont'd)*** *Basic Statistical Analysis for Chemical Analysis*
1230 - 1245	*Break*
1245 - 1420	***Method of Validation*** *ISO 17025 Awareness*
1420 - 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 - 0830	***Method of Validation (cont'd)*** *Customer Management According to ISO 17025*
0830 - 0930	***Method of Validation (cont'd)*** *What is the Importance of ISO 17025 Accreditation?*
0930 - 0945	*Break*
0945 - 1230	***Method of Validation (cont'd)*** *What is Proficiency Testing (PT) & What is its Importance?*
1230 - 1245	*Break*
1245 - 1420	***Method of Validation (cont'd)*** *What Method Validation Means? ● Why Method Validation is necessary?*
1420 - 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

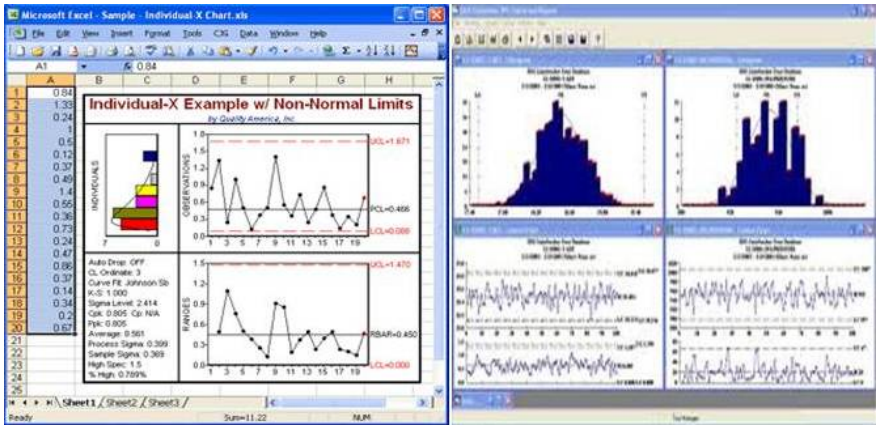
0730 - 0830	***Method of Validation (cont'd)*** *Types of Method that Require Validation*
0830 - 0930	***Method of Validation (cont'd)*** *Method Validation Parameters for Chemistry Analysis (Determination of LOD, Determination of LOQ, Determination & Calculation of MoU, Trueness, Precision, Selectivity, Linearity)*
0930 - 0945	*Break*
0945 - 1230	***Method of Validation (cont'd)*** *Setting Validation Criteria that will Satisfy the Needs of Customers*
1230 - 1245	*Break*
1245 - 1420	***Method of Validation (cont'd)*** *The Validation Proper. To Prove the Method Can Achieve What was Promised to Customers*
1420 - 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 - 0830	***Method of Validation (cont'd)*** *Proof of the Performance of a Method and/or Assuring the Quality of a Measurement According to ISO 17025*
0830 – 0930	***Method of Validation (cont'd)*** *Maintenance of Validation by Means of: Analysis of QC samples; Analysis of CRM's*
0930 - 0945	*Break*
0945 - 1045	***Method of Validation (cont'd)*** *Maintenance of Validation by Means of: Reproducibility Studies like Proficiency Testing and Interlaboratory Studies; Customer Management*
1045 - 1100	*Break*
1100 - 1300	***Case Study*** *How to Write a Method Validation Document. Students will Work in Groups or Individually to Solve a Case Study*
1300 - 1315	***Course Conclusion***
1315 - 1415	***COMPETENCY EXAM***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Simulator (Hands-on Practical Sessions)

Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using our state-of-the-art simulator "SPC for Excel Software".



SPC for EXCEL SOFTWARE

Course Coordinator

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