COURSE OVERVIEW LE1014
Laboratory Testing & Management

Course Title
Laboratory Testing & Management

Course Date/Venue
Session 1: July 27-31, 2025/Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE
Session 2: December 07-11, 2025/Meeting Plus 9, City Centre Rotana, Doha, Qatar

Course Reference
LE1014

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

Course Description

This practical and highly-interactive course includes real-life case studies where participants will be engaged in a series of interactive small groups and class workshops.

This course is designed to provide participants with a detailed and up-to-date overview of Laboratory Testing & Management. It covers the laboratory systems, laboratory infrastructure and safety, sample management and good laboratory practices (GLP); the laboratory equipment management, troubleshooting and repair procedures and quality control in laboratory testing; the wet chemistry techniques, chromatographic methods, spectroscopic analysis, microbiological testing methods and physical testing methods; and the data acquisition and management, ISO/IEC 17025 implementation strategies and method validation and verification.

Further, the course will also discuss the uncertainty measurement, internal and external audits and document and record control; the customer communication and complaint handling; and the laboratory strategic planning and laboratory key performance indicators (KPIs).

During this interactive course, participants will learn the personnel competence and training, inventory and procurement management; the ethics and confidentiality in labs, lean management and 5S and risk-based thinking in lab management; the automation and digital transformation covering robotics and lab automation tools, role of AI and machine learning, integration with LIMS and ERP and benefits and challenges of digital labs; and the environmental and waste management emergency preparedness in laboratories.

Course Objectives

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

- Apply and gain a comprehensive knowledge on laboratory testing and management
- Discuss laboratory systems, laboratory infrastructure and safety, sample management and good laboratory practices (GLP)
- Carryout laboratory equipment management, troubleshooting and repair procedures and quality control in laboratory testing
- Employ wet chemistry techniques, chromatographic methods, spectroscopic analysis, microbiological testing methods and physical testing methods
- Apply data acquisition and management, ISO/IEC 17025 implementation strategies and method validation and verification
- Implement uncertainty measurement, internal and external audits and document and record control
- Carryout customer communication and complaint handling, laboratory strategic planning and laboratory key performance indicators (KPIs)
- Develop personnel competence and training and apply inventory and procurement management
- Apply ethics and confidentiality in labs, lean management and 5S as well as, risk-based thinking in lab management
- Describe automation and digital transformation covering robotics and lab automation tools, role of AI and machine learning, integration with LIMS and ERP and benefits and challenges of digital labs
- Employ environmental and waste management emergency preparedness in laboratories

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 laboratory testing and management for laboratory technicians, laboratory managers, laboratory supervisors, research scientists, quality control (QC) personnel, R&D professionals, regulatory compliance officers and those who involved in or overseeing laboratory operations.

Course Certificate(s)

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

Certificate Accreditations

Haward's 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**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). 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:

Mr. Paul Patsi, MSc, BSc, is a **Senior Analytical Chemist** and an **International Expert** in **Water & Waste Water Treatment Technology** with over **25 years** of extensive experience in **Analytical Laboratory** and **Water & Wastewater Treatment Engineering**. His expertise covers **Laboratory Assessment**, **Microbiological Quality Assurance**, **Analytical Chemistry**, **Statistical Analysis**, **Laboratory Safety**, **Equipment & Infrastructure Management**, **Budgeting & Planning of Laboratory Consumables**, **Business Administration**, **Personnel Management**, **Laboratory Management**, **Chemical Analysis**, **Laboratory Auditing**, **Risk Assessment**, **Microbiological Analysis of Water & Waste Water**, **Waste Water Treatment Analysis**, **Water Chemistry**, **HACCP**, **ISO 22000**, **ISO 17025**, **ISO 9001**, Good Manufacturing Practice (**GMP**), Good Hygiene Practice (**GHP**) and Good Laboratory Practice (**GLP**). He is also an expert in microbiological indoor air quality, water biology, food sampling and calibration. He is currently the **Head of Industrial Analytical Laboratory** of PINDOS wherein he is in-charge of the budgeting, auditing, consumables, suppliers, personnel management, equipment and infrastructure management along with waste water treatment and water/environmental legislation.

During his career life, Mr. Paul has held key positions such as the **Head of Microbiology & Chemical Laboratory**, **Head of Quality Control**, **Technical Consultant**, **Research Projects Specialist**, **Scientific Consultant**, **Biologist-Scientific Expert** and **Biologist** for multi-billion companies like the **European Union**, **Help LTD**, **Lake Pamvotis Municipality Company**, **Hellenic Centre for Marine Research**, **Cargill** and **Nestle** just to name a few.

Mr. Paul has a **Master's** degree in **Food Science & Food Technology** from the **University of Ioannina**, **Greece** and a **Bachelor's** degree in **Biology** from the **Aristotle University of Thessaloniki**, **Greece**. He is a **Certified Instructor/Trainer** and a **Member** of the **Society for Applied Microbiology**, **Society of Biological Scientist** and the **Global Coalition for Sustained Excellence in Food & Health Protection**. He has further delivered various trainings, workshops, seminars, courses and conferences internationally.

Course Fee

Dubai	**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.
Doha	**US$ 6,000** per Delegate. 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-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.

Accommodation

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

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

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Introduction to Laboratory Systems*** *Types of Laboratories (Analytical, Research, QC) • Laboratory Functions and Workflow • Regulatory and Accreditation Bodies • Roles and Responsibilities of Lab Personnel*
0930 – 0945	*Break*
0945 – 1040	***Laboratory Infrastructure & Safety*** *Layout and Environmental Controls • Safety Signs and Emergency Procedures • Lab PPE and Chemical Hygiene Plan • Risk Assessment and Hazard Control*
1040 – 1135	***Sample Management*** *Sample Receipt and Registration • Chain of Custody Documentation • Storage and Preservation Techniques • Sample Tracking and Disposal*
1135 - 1230	***Good Laboratory Practices (GLP)*** *Principles and Objectives of GLP • Documentation and SOP Adherence • Personnel Training and Qualification • Internal Audits and Compliance*
1230 – 1245	*Break*
1245 – 1335	***Laboratory Equipment Management*** *Equipment Selection and Validation • Calibration and Maintenance Protocols • Troubleshooting and Repair Procedures • Equipment Logs and Utilization Tracking*

1335 - 1420	***Quality Control in Laboratory Testing*** *Purpose and Types of QC Samples • Calibration Verification and Controls • Blank, Duplicate and Spiked Samples • Control Charts and Trend Analysis*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day One*

Day 2

0730 – 0830	***Wet Chemistry Techniques*** *Titration and Gravimetric Methods • Solubility and Precipitation Tests • Colorimetric Measurements • Use of Standard Solutions*
0830 – 0900	***Chromatographic Methods*** *Principles of Chromatography • Gas Chromatography (GC) Overview • High-Performance Liquid Chromatography (HPLC) • Method Validation and Troubleshooting*
0900 – 0915	*Break*
0915 – 1100	***Spectroscopic Analysis*** *UV-Vis Spectrophotometry • Atomic Absorption Spectroscopy (AAS) • FTIR and NIR Techniques • Instrument Calibration and Maintenance*
1100 – 1230	***Microbiological Testing Methods*** *Sterilization and Aseptic Techniques • Sample Preparation and Incubation • Culture Media Selection and Use • Colony Counting and Result Interpretation*
1230 – 1245	*Break*
1245 – 1335	***Physical Testing Methods*** *pH and Conductivity Measurement • Turbidity and TDS Testing • Melting/Boiling Point Determination • Moisture Content Analysis*
1335 - 1420	***Data Acquisition & Management*** *Laboratory Information Management System (LIMS) • Manual versus Automated Data Recording • Ensuring Data Integrity (ALCOA+ Principles) • Backup and Archiving Procedures*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Two*

Day 3

0730 – 0830	***ISO/IEC 17025 Overview*** *Scope and Structure of the Standard • Key Clauses and Requirements • Accreditation Process and Audits • Implementation Strategies*
0830 – 0900	***Method Validation & Verification*** *Precision, Accuracy and Linearity • Detection and Quantitation Limits • Selectivity and Robustness • Inter-Laboratory Comparisons*
0900 – 0915	*Break*
0915 – 1100	***Uncertainty Measurement*** *Concepts and Significance • Sources of Uncertainty • Calculation Methods (GUM Approach) • Reporting with Test Results*

1100 – 1230	***Internal & External Audits*** *Audit Types and Planning • Conducting Internal Audits • Responding to Findings and NCRs • Proficiency Testing and Inter-Lab Audits*
1230 – 1245	*Break*
1245 – 1335	***Document & Record Control*** *Types of Lab Documents (SOPs, WI, Forms) • Document Approval and Review Cycles • Version Control and Archiving • Records Retention and Retrieval*
1335 - 1420	***Customer Communication & Complaint Handling*** *Reporting Test Results and Interpretations • Client Feedback Mechanisms • Managing and Investigating Complaints • Corrective and Preventive Actions (CAPA)*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Three*

Day 4

0730 – 0830	***Laboratory Strategic Planning*** *Vision and Mission Development • SWOT Analysis and Strategic Goals • Resource Planning and Budgeting • Performance Monitoring*
0830 – 0930	***Laboratory Key Performance Indicators (KPIs)*** *Definition and Purpose of KPIs • Productivity and Turnaround Time • Quality and Error Rate Metrics • Staff Performance Indicators*
0930 – 0945	*Break*
0945 – 1100	***Personnel Competence & Training*** *Job Descriptions and Qualifications • Induction and Ongoing Training • Competency Assessment Techniques • Training Matrix and Records*
1100 – 1215	***Inventory & Procurement Management*** *Chemical and Reagent Tracking • Inventory Control Systems • Vendor Selection and Evaluation • Procurement Planning and Storage*
1215 – 1230	*Break*
1245 – 1335	***Ethics & Confidentiality in Labs*** *Ethical Behavior in Testing/Reporting • Avoiding Conflicts of Interest • Client Confidentiality and Data Security • Code of Conduct and Whistleblower Policies*
1335 - 1420	***Lean Management & 5S in Labs*** *Principles of Lean Thinking • 5S: Sort, Set in Order, Shine, Standardize, Sustain • Waste Reduction in Lab Processes • Continuous Improvement Initiatives*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Four*

Day 5

0730 – 0830	***Risk-Based Thinking in Lab Management*** *Identifying and Analyzing Risks • Risk Mitigation Strategies • Integrating Risk with QMS • FMEA and HACCP Applications*
0830 – 0930	***Automation & Digital Transformation*** *Robotics and Lab Automation Tools • Role of AI and Machine Learning • Integration with LIMS and ERP • Benefits and Challenges of Digital Labs*
0930 – 0945	*Break*
0945 – 1045	***Environmental & Waste Management*** *Laboratory Waste Categorization • Waste Minimization Strategies • Hazardous Waste Handling • Legal and Environmental Compliance*
1045 – 1215	***Emergency Preparedness in Laboratories*** *Emergency Response Plan • Fire and Chemical Spill Response • Evacuation Drills and Training • Incident Reporting and Investigation*
1215 – 1230	*Break*
1230 – 1345	***Lab Accreditation & Certification Journey*** *Steps for Achieving ISO 17025 • Gap Analysis and Readiness Assessment • Mock Audits and Readiness Review • Sustaining Accreditation*
1345 – 1400	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about Topics that were Covered During the Course*
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-

Course Coordinator

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