COURSE OVERVIEW LE0443(KJ1)
Laboratory Instruments Calibration & Troubleshooting Techniques

Course Title

Laboratory Instruments Calibration & Troubleshooting Techniques

Course Date/Venue

Session 1: February 23-27, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Session 2: October 05-09, 2025/Crowne Meeting Room, Crowne Plaza Al Khobar, KSA

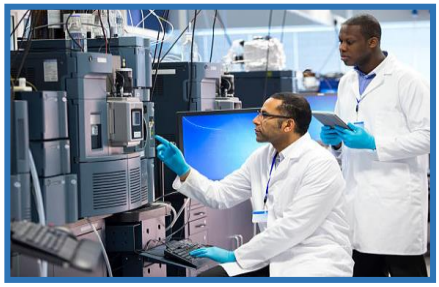
Course Reference

LE0443(KJ1)

Course Duration/Credits

Five days/3.0 CEUs/30 PDHs

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 delegates with a detailed and up-to-date overview on the systematic calibrations and troubleshooting techniques of laboratory instruments in a safely manner.

Participants will be provided with knowledge and skills to identify different types of samples, carryout proper sampling and handling and troubleshoot in case of errors.

The course is intended for those who are willing to acquire knowledge on the proper techniques in calibrating major instruments used at the laboratory such as GC, GC/MS, LC, ICP etc.

The course links together an understanding of performance characteristics and limitations imposed by instrument design.

Course Objectives

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

- Calibrate and troubleshoot the major instruments used in laboratory including gas chromatography, mass spectrometry, liquid chromatography and inductively coupled plasma
- Carryout sampling and sample handling in a correct manner
- Demonstrate proper procedures of troubleshooting in case of errors
- Explain the basic and meaning of calibrating each instrument
- Run the different types of samples associated with work
- Discuss safety concerns involved in calibrating and troubleshooting laboratory instruments

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 instruments calibrations and troubleshooting techniques for production chemists, laboratory staff and those who are using major laboratory instruments such as GC, GC/MS, LC, ICP etc. This includes chemists, scientists, analysts, instrument engineers and laboratory 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.

Accommodation

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

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course.

Certificate 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 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.

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. **Nikolas Karnavos**, MSc, BSc, is a **Senior Analytical Chemist** and **HSE Consultant** with over **35 years** of extensive experience within the **Oil**, **Gas**, **Refinery** and **Petrochemical** industries. His expertise widely covers **Environmental Management System** (**ISO 14001**), **Introduction to Oil** & **Gas**, **Oil Spill Management**, **Infection Control**, **Industrial Hygiene**, **Air Quality Management**, **Carbon Footprint**, **Environmental Impact Analysis**, **Hazardous Waste Management**, **HAZMAT** & **HAZCOM**, **Environmental Impact** & **Life Cycle Assessments**, and **Environmental Engineering** & **Technology, Gas & Liquid Chromatograph Process Analysers**, **Process Analyzer Techniques** (**Online** & **Offline**), Laboratory Information Management System (**LIMS**), **Data & Method Validation in Analytical Laboratories**, Laboratory **Automation Techniques**, **Practical Problem Solving in Chemical Analysis**, **Practical Statistical Analysis of Lab Data**, **Chemical Laboratory**, **Analytical Laboratory & Instrumentation**, Laboratory **Health & Safety**, **GLP**, Laboratory **Quality Management** (**ISO 17025**), **ISO 9001** and Medical Laboratory Quality Management (**ISO 15189**). Further, he is also well-versed in Environmental **Online Analyzers** (**Air** & **Water**), **Gas Chromatography** and various instrumental methods of analysis such as **Water Analysis & Quality Control**, **Water and Wastewater Chemical** Analysis, **Statistical Data and Laboratory Analysis**, **Gas** Analysis, **Qualitative Fuel** Analysis, **Environmental Chemical** Analysis, **Laboratory Environmental** Analysis including Water Quality Testing, Process Water and **Wastewater Effluents**, Oily **Sludge Treatment**, Atomic Absorption and Spectroscopic Methods in Analytical Chemistry, **Analytical Method Development** and **Methods of Environmental Measurements** (**Water**, **Air**, **Liquid** & **Solid Wastes**).

Mr. Karnavos is currently the **Laboratory Manager** of **Exxon** wherein he is responsible for **ISO 17025 certification**, upgrading laboratory equipment in **refinery**, **petrochemical** and **polypropylene** plants, upgrading and extending LIMS, handling the transition plan process of the existing laboratory to a new as well as formulating and executing the plans for applied research and technology transfer. During his career life, he had occupied several significant positions as the **Laboratory Analyst**, **Laboratory Professor**, **Quality Manager**, **Partner & Managing Director**, **Environmental Engineer**, **Process Engineer**, **Environmental Management Corporate Department Head** and **Quality Control & Plastics Application Head** with different international companies like the **AQUACHEM**, **Hellenic Petroleum** (**EXXON**) and **Technological Institute**.

Mr. Karnavos holds a **Master** degree in **Chemical Engineering** and **Bachelor** degrees in **Mechanical Engineering** and **Petroleum Engineering** from the **Aristotelian University of Thessaloniki**, **Technological Institute** and **KATEE Kavala** respectively. He is an **Accredited Trainer** for the Organization for the Certifications & Vocational Guidance (**EOPPEP**) and an **Accredited Environmental Auditor** from the **IEMA**. Further, he is the **President** of Greek **Association of Chemical Engineers** and an active member of various professional engineering bodies internationally like the **IEMA**, **Technical Chamber** of Greece and the **CONCAWE**. He also **published numerous books** and **scientific papers** and delivered various trainings and workshops worldwide.

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	***Calibration of Major Instruments Used in the Laboratory*** *Gas Chromatography (GC)*
0930 – 0945	*Break*
0945 – 1100	***Calibration of Major Instruments Used in the Laboratory (cont'd)*** *Gas Chromatography (GC)(cont'd)*
1100 – 1230	***Calibration of Major Instruments Used in the Laboratory (cont'd)*** *Gas Chromatography/Mass Spectrometry (GC/MS)*
1230 – 1245	*Break*
1245 – 1420	***Calibration of Major Instruments Used in the Laboratory (cont'd)*** *Gas Chromatography/Mass Spectrometry (GC/MS) (cont'd)*
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0930	***Calibration of Major Instruments Used in the Laboratory (cont'd)*** *Liquid Chromatography (LC)*
0930 – 0945	*Break*
0945 – 1100	***Calibration of Major Instruments Used in the Laboratory (cont'd)*** *Liquid Chromatography (LC) (cont'd)*
1100 – 1230	***Calibration of Major Instruments Used in the Laboratory (cont'd)*** *Inductively Coupled Plasma (ICP)*
1230 – 1245	*Break*
1245 – 1420	***Calibration of Major Instruments Used in the Laboratory (cont'd)*** *Inductively Coupled Plasma (ICP) (cont'd)*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0930	***Sampling & Sample Handling***
0930 – 0945	*Break*
0945 – 1115	***Sampling & Sample Handling (cont'd)***
1115 – 1230	***Troubleshooting in Case of Errors***
1230 – 1245	*Break*
1245 – 1420	***Troubleshooting in Case of Errors (cont'd)***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

0730 – 0930	***Know the Basic & Meaning of Calibrating Each Instrument***
0930 – 0945	*Break*
0945 – 1100	***Know the Basic & Meaning of Calibrating Each Instrument (cont'd)***
1100 – 1230	***Run Different Type of Samples Associated with Work***

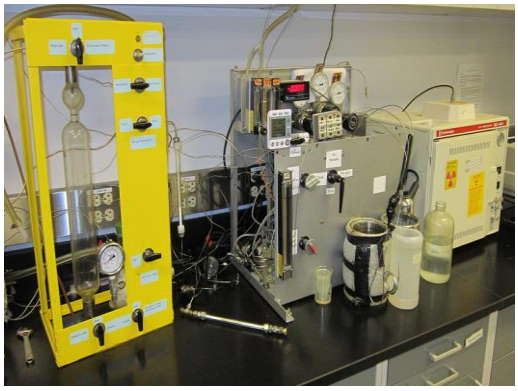
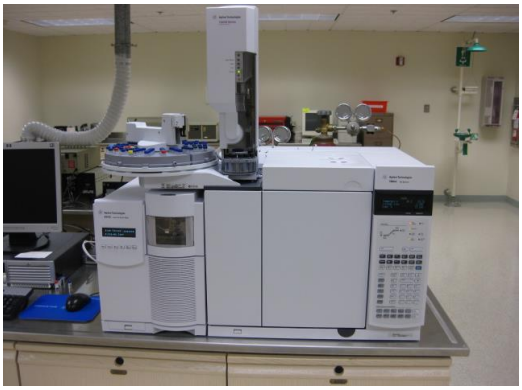
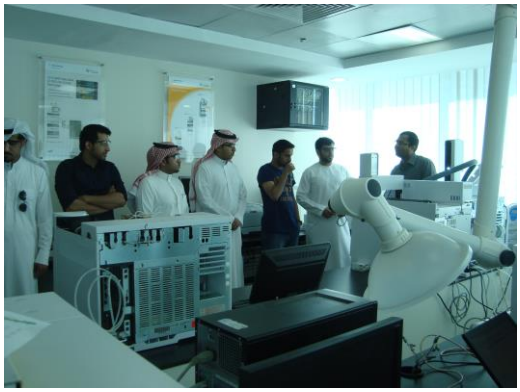
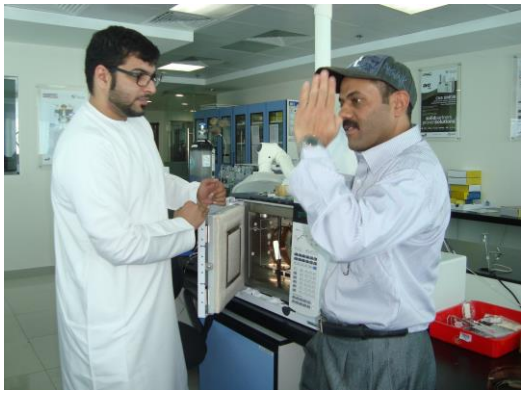
1230 – 1245	***Break***
1245 – 1420	***Run Different Type of Samples Associated with Work (cont'd)***
1420 – 1430	***Recap***
1430	***Lunch & End of Day Four***

Day 5

0730 – 0930	***Run Different Type of Samples Associated with Work (cont'd)***
0930 – 0945	*Break*
0945 – 1100	***Safety Concerns***
1100 – 1230	***Safety Concerns (cont'd)***
1230 – 1245	*Break*
1245 – 1345	***Safety Concerns (cont'd)***
1345 – 1400	***Course Conclusion***
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Practical Sessions/Site Visit

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

Course Coordinator

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