COURSE OVERVIEW LE0060
Practical Problem Solving in Chemical Analysis

Course Title
Practical Problem Solving in Chemical Analysis

Course Date/Venue
Session 1: April 19-23, 2026/Crowne Meeting Room, Crowne Plaza Al Khobar, KSA
Session 2: November 22-26, 2026/Boardroom1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Course Reference
LE0060

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

Course Description

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

Almost all analytical courses are technique oriented. Each tends to be reviewed in depth, but in isolation and without reference to other methods. What distinguishes this course is that it takes a multi-disciplined and integrated look at analytical techniques, with emphasis on the strengths and limitations of each in a problem-solving context.

This course is designed to give a practical approach to the solution of method problems and technical problems that may require multiple technologies. It will cover proper sampling procedures, most of the various analytical and physical measurement tools available for problem solving, including separation methods and classical and instrumental techniques. Additionally, the course will cover the important computer procedures that can be used in the analysis of the data. During this course, the instructor and participants will practice our approach on examples and participants' problems.

Participants are encouraged to bring several problems with them to the course.

Course Objectives

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

- Solve problems in cost effective and timely manner
- Acquire an integrated overview of many techniques and procedures used in modern analytical and physical measurement laboratories for polymers, petrochemicals, industrial chemicals and related materials.
- Assess values and limitations of each technique and be prepared to make practical choices to apply in the solution of difficult problems
- Evaluate the importance of sampling, separation procedures and data treatment in problem solving

And importantly, you will have an opportunity to get help with your own problems in one of the three scheduled workshops.

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 covers systematic techniques in practical problem solving in chemical analysis for experienced professionals including scientists, analysts, chemists, supervisors, engineers, managers and university professors. Further, those who are involved with characterizing unknowns and handling difficult analytical problems in research (R&D and R&T), quality control, plant support, regulatory compliance or customer support will find this course extremely useful.

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 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: -

- 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:

Mr. Paul Patsi, MSc, BSc, is a **Senior Analytical Chemist** and an **International Expert** in **Water & Waste Water Treatment Technology** with over **20 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** degree in **Food Science and Food Technology** from the **University of Ioannina** (**Greece**) and a **Bachelor** 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**.

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 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 & Objectives Defining the Problem*** *Problem Solving Perspectives ● Types of Problems ● Deciding on Information ● Regulatory Issues ● Business Issues*
0930 – 0945	*Break*
0945 – 1100	***Spectroscopy–Qualitative & Quantitative Techniques*** *UV-VIS ● Fluorescence ● Mid-Infrared*
1100 – 1230	***Spectroscopy–Qualitative & Quantitative Techniques (cont'd)*** *Near Infrared ● NMR*
1230 – 1245	*Break*
1245 – 1420	***Spectroscopy–Qualitative & Quantitative Techniques (cont'd)*** *Mass Spectroscopy ● Raman Spectroscopy*
1420 - 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0930	***Physical Properties – Bulk*** *Solids ● Density ● Viscosity ● Particle Characterization*
0930 – 0945	*Break*
0945 – 1100	***Classical Methods*** *Titrimetry ● Voltammetry ● Atomic Spectroscopy*
1100 – 1215	***Workshop I*** *Instructor's Examples*
1215 – 1230	*Break*
1230 – 1420	***Chromatography*** *GC ● HPLC ● TLC ● Chiral ● Method Validation*
1420 - 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0930	***Physical Properties – Colligative*** *Solution Viscosimetry ● Molecular Weight ● SEC ● Rheology ● Thermal Analysis*
0930 – 0945	*Break*
0945 – 1100	***Microscopy*** *Optical ● Electron ● Special Techniques*
1100 – 1215	***Separations*** *Filtration ● Extraction ● Distillation*

1215 – 1230	*Break*
1230 – 1420	***Separations (cont'd)*** *Centrifugation ● SPE & SPME*
1420 - 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

0730 – 0930	***Workshop II*** *Problems Submitted by Participants*
0930 – 0945	*Break*
0945 – 1100	***Multivariate Analysis*** *Statistical Design ● Data Analysis ● Chemometrics*
1100 – 1215	***Process Analytical Technology*** *Defining Processes ●Teamwork ● Cost Justification*
1215 – 1230	*Break*
1230 – 1420	***Sampling, Record Keeping & LIMS*** *Techniques for Solids, Liquids & Gases ● Containers ● Labels*
1420 - 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 0930	***Sampling, Record Keeping & LIMS (cont'd)*** *Record Keeping ● Chain of Custody ● LIMS*
0930 – 0945	*Break*
0945 – 1100	***Summary: The Multidisciplined Approach*** *Applications to R&D ● Applications to Manufacturing ● Regulatory & Litigation Issues*
1100 – 1215	***Summary: The Multidisciplined Approach (cont'd)*** *Separations ● Method Choice*
1215 – 1230	*Break*
1230 – 1345	***Workshop III*** *Problem Solving in Petrochemicals, Polymers & other Fields ● Problems Submitted by Participants*
1345 - 1400	***Course Conclusion***
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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