

COURSE OVERVIEW LE0060-4D

Practical Problem Solving in Chemical Analysis

Course Title

Practical Problem Solving in Chemical Analysis

Course Date/Venue

August 26-29, 2024/Al Dhafra Meeting Room,
Royal Rose Hotel, Abu Dhabi, UAE

Course Reference

LE0060-4D

Course Duration/Credits

Four days/2.4 CEUs/24 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 “Howard 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 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 completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations: -


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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 **2.4 CEUs** (Continuing Education Units) or **24 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.

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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.

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. Tarek Awad, PhD, MSc, PGDip, BSc, is a **Senior Analytical Chemist** with over **25 years** of experience within the **Oil, Gas, Refinery & Petrochemical** industries. His experience widely covers in the areas of **Product & Chemical Analysis, QA/QC, Analytical Management Activities/Techniques, Microscopy, Mercury Removal & Analysis Techniques, Mercury (Hg) Analyzer, Mercury Vapor Analyzers, Natural Gas & LNG, Analytical Laboratory Management, Gas Chromatography (GC), Laboratory Quality Management, Lab Management Systems, Crude Oil Testing & Equipment, IP/ASTM Test Methods, Crude Oil Sample Analysis, Analysis of Water Quality Specification, Water Sampling Techniques, Water Analysis & Quality Control, Laboratory Environmental Analysis (Soil, Water, Air), Health & Safety and Laboratory Operations**. Further, he is well-versed in **Six Sigma Analysis, Six Sigma Technology, Tool Landscape, Lean Six Sigma, DMAIC, Statistical Process Control, Measurement System Analysis, Business Analysis, Corporate Strategies, Budget Preparations & Follow-Up, Capital & Resources Planning & Management, Planning Claims Management, Quality Assurance & Control, Total Quality Management, Project Management, Quality Management System, Analytical Problem-Solving & Decision Making and Communication & Leadership Skills**. He is a **Certified Data Analyst, Lean Six Sigma Black Belt (LSSBB)**, and **Certified Lead Auditor** in accordance with **ISO 9001, ISO14001, OHSAS 18001 and ISO 17025**.

Dr. Tarek gained his expertise through his long-term dedication as a **Senior Laboratory Analyst** in **SEGAS LNG**. He was in-charge of plant optimization, Quality, Environmental & OHSAS Standards. Prior to this, he was the **Laboratory Manager**, an **Advisor** for a reputable oil, gas and LNG company in the Middle East and was the **Senior Corrosion & QC Chemist** of **WEPCO** wherein his duties involved quality control, corrosion control and chemical optimization for oilfield. He has built-up a formidable reputation with his professionalism and practical problem-solving abilities and has performed significant contribution to his fields.

Dr. Tarek has **PhD in Analytical Chemistry**, a **Post Graduate Diploma** and **Master's degree in Material Science (Corrosion)** and **Bachelor's degree in Chemistry**. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management (ILM)**, a **Certified CLSSBB Lean Six Sigma**, a **Certified ISO Auditor/Lead Auditor (QMS)**, a **Certified IEMA Auditor (EMS)** and an active member of International Register of Certificated Auditors (**IRCA**), American Center Library, Egyptian Accreditation Council (**EGAC**), Technical Assistance Center (**TAC**), Egyptian Corrosion Society, Egyptian Arab Society of Material Science, Egyptian Syndicate of Scientific Profession and Egyptian Petroleum Association. He has further published various scientific papers, technical journals as well as delivered numerous trainings, courses, seminars and workshops worldwide.

Course Fee

US\$ 4,500 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: Monday, 26th of August 2024

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 • Near Infrared • NMR Mass Spectroscopy • Raman Spectroscopy
1100 – 1230	Physical Properties – Bulk Solids • Density • Viscosity • Particle Characterization
1230 – 1245	Break
1245 – 1420	Classical Methods Titrimetry • Voltammetry • Atomic Spectroscopy
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: Tuesday, 27th of August 2024

0730 – 0930	Workshop I Instructor's Examples
0930 – 0945	Break
0945 – 1100	Chromatography GC • HPLC • TLC • Chiral • Method Validation
1100 – 1215	Physical Properties – Colligative Solution Viscosimetry • Molecular Weight • SEC • Rheology • Thermal Analysis
1215 – 1230	Break
1230 – 1420	Microscopy Optical • Electron • Special Techniques
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: Wednesday, 28th of August 2024

0730 – 0930	Separations <i>Filtration • Extraction • Distillation • Centrifugation • SPE & SPME</i>
0930 – 0945	<i>Break</i>
0945 – 1100	Workshop II <i>Problems Submitted by Participants</i>
1100 – 1215	Multivariate Analysis <i>Statistical Design • Data Analysis • Chemometrics</i>
1215 – 1230	<i>Break</i>
1230 – 1420	Process Analytical Technology <i>Defining Processes • Teamwork • Cost Justification</i>
1420 - 1430	Recap <i>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</i>
1430	<i>Lunch & End of Day Three</i>

Day 4: Thursday, 29th of August 2024

0730 – 0930	Sampling, Record Keeping & LIMS <i>Techniques for Solids, Liquids & Gases • Containers • Labels</i>
0930 – 0945	<i>Break</i>
0945 – 1230	Sampling, Record Keeping & LIMS (cont'd) <i>Record Keeping • Chain of Custody • LIMS</i>
1100 – 1230	Summary: The Multidisciplined Approach <i>Applications to R&D • Applications to Manufacturing • Regulatory & Litigation Issues • Separations • Method Choice</i>
1230-1245	<i>Break</i>
1245-1345	Workshop III <i>Problem Solving in Petrochemicals, Polymers & other Fields • Problems Submitted by Participants</i>
1345 - 1400	Course Conclusion <i>Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course</i>
1400 – 1415	POST-TEST
1415 – 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch & End of Course</i>



Practical Sessions

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



Course Coordinator

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