

**COURSE OVERVIEW LE0330**  
**Online Analyzers Design**

**Course Title**

Online Analyzers Design

**Course Date/Venue**

Session 1: June 22-26, 2025/Boardroom 1,  
 Elite Byblos Hotel Al Barsha,  
 Sheikh Zayed Road, Dubai, UAE  
 Session 2: November 17-21, 2025/Fujairah  
 Meeting Room, Grand  
 Millennium Al Wahda Hotel, Abu  
 Dhabi, UAE



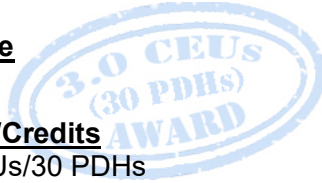
**H-STK<sup>®</sup>**  
**INCLUDED**

**Course Reference**

LE0330

**Course Duration/Credits**

Five days/3.0 CEUs/30 PDHs



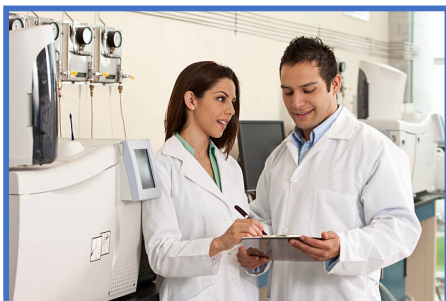
**Course Description**



***This practical, highly-interactive course includes practical sessions and exercises where participants will visit the laboratory and they will be introduced to various lab instruments and process analyzers. Practical sessions will be performed using one instrument in order to apply the theory learnt in the class.***



With the aim of reducing costs and optimizing a uniform stream of production at refineries from crude oil stockpiling to shipment of final products, the online analysis systems were developed in order to accurately grasp in real time the qualitative properties of crude oil, products base materials and products. With online analysis system, production takes place continuously and there is minimum need for laboratory tests, which have taken up much time in the past, or batch productions.



This course covers multiple measurement techniques ranging from physical, thermal, electrical, and optical techniques through those utilized in electrochemistry, chromatography and spectroscopy. It also touches on maintenance, system packaging, and system errors consideration.

The course includes online analyzers, and covers the principles of analyzer concept, available systems and methods of analysis, latest updates, safety aspects related to them and method of selection based on required application.

### Course Objectives

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

- Apply and gain an in-depth knowledge on online analyzers application and troubleshooting
- Discuss industrial analytical chemistry, process analytical chemistry, process control & analytical instrumentation, online and offline process analyzer, measurement accuracy and maintenance of online analyzers
- Illustrate the chemical analysis of spectroscopy, LEL & NMR, oxygen analyzers, electrochemical analyzers, gas chromatography, gas analyzers and moisture analyzers
- Recognize instrumentation systems which include sampling systems, process samples, stack particulates and analyzer safety

### 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 is intended as an introductory overview for persons who are starting out in the industry or as a refresher for more experienced personnel; those who need updated information about techniques they use regularly as well as those with which they are less familiar.

### 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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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.

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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 **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.

### Accommodation

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



### 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. John Fetzer, PhD, MSc, BSc**, is a **Senior Analytical & Laboratory Consultant** with over **30 years** of academic and industrial experience in the **Petrochemical, Oil & Gas** industries. His extensive expertise covers the areas of **Statistical Analysis, Analytical Chemistry, Measurement Uncertainty** in Testing (**ISO-IEC 17025**), **Laboratory Quality Management Systems (ISO 17025)**, **Molecular Spectroscopy, Laboratory Instrument Calibration, Chromatography, Mass Spectrometry, Separation Methods, Statistical Treatment of Experimental Data, Luminescence Anisotropy, Catalytic Hydrocracker Chemistry, Molecular Transformations, Polycyclic Aromatic Hydrocarbons**. Presently, he works with **Fetzpahs Consulting** providing **technical and consultancy services** for numerous companies. Further, he is also versed in **Water Chemistry** for Thermal Power Station Plant Chemist, **Wastewater Treatment Technology, Water Reservoirs, Water Storage Tanks, Water Treatment, Extended Activated Sludge Treatment, Water Analysis, Networking System, Water Network Design, Industrial Water Treatment** in Refineries & Petrochemical Plants, **Piping System, Water Movement, Water Filtering, Mud Pumping, Sludge Treatment and Drying**.

Dr. Fetzer is a **recognized world-class expert** in the **chemistry and analysis of polycyclic aromatic compounds**. Further, he is a **specialist in the development of separation methods** aimed particularly at crude oil, its distillate fractions (including asphalt and residuum), catalytically-processed petroleum products (waxes, mineral oils, lube oil basestocks, fuels, and intermediate oils, petrochemical products, and additives). He has a **high-level of expertise** in high-performance liquid, supercritical fluid, gel-permeation and gas chromatographies and fluorescence and UV absorbance measurements. For more than **two decades**, he had worked with **Chevron** as their **Laboratory Manager, Senior Research Chemist** and as the **Senior Trainer** within their **Research & Technology Centre** holding training courses in **quality principles, project management, chromatography, fluorescence spectrometry, and the principles of chemical analysis**. Having gained a formidable reputation in his field owing to his **lengthy practical experience** and the **outstanding skills & knowledge** he has exemplified; he had been invited to several lectures and conventions by different universities and organizations internationally. He had also been a recipient of **numerous honors & awards** and had further been repeatedly catapulted amongst the **'Who's Who in America'**, the **'Who's Who in Science and Engineering'** and the **American Men and Women of Science**.

Dr. Fetzer has **PhD, Master's and Bachelor's** degree in **Chemistry & Analytical Chemistry**. He is a well-regarded fellow of the **American Chemical Society**, the **Society for Applied Spectroscopy**, the **American Society for Testing and Materials**, the **Chemical Consultants Network**, the **International Society for Polycyclic Aromatic Compounds**, and the **American Institute of Chemical Engineers (AIChE)** where he was its **President** for many years. Further to that, he is a **Certified Instructor/Trainer** and he is also an active member of **several editorial advisory boards** for the **Journal of Chromatography**, the **Analytical and Bioanalytical Chemistry**, the **Fresenius Journal of Analytical Chemistry** and the **Journal of Analytical Chemistry**. Moreover, he had been part of the **Selection Jury** for the **ACS Chromatography Award** and the **Chemical Instrumentation Award** for the **Division of Analytical Chemistry** and until today, he remains an active **Speaker** for the **American Chemical Society**. He has participated in over a **hundred research activities** and has produced over **one hundred and forty publications** and **editorial articles** for **various recognized journals** 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	<b>PRE-TEST</b>
0830 – 0930	<b>Introduction and General Considerations</b> Course Overview • Industrial Analytical Chemistry • Practical Aspects of Process Analytical Chemistry • Process Control & Analytical Instrumentation • Principles of Online and Offline Process Analyzer Concept • Measurement Accuracy • Maintenance
0930 – 0945	Break
0945 – 1100	<b>Chemical Analysis: Introduction</b>
1100 – 1230	<b>Chemical Analysis: Spectroscopy</b> UV (Ultraviolet), IR (Infrared) & NIR (Near Infrared)
1230 – 1245	Break
1245 – 1420	<b>Chemical Analysis: Spectroscopy (cont'd)</b> Ultraviolet, Infrared & Near Infrared UV (Ultraviolet), IR (Infrared) & NIR (Near Infrared) (cont'd)
1420 - 1430	<b>Recap</b>
1430	Lunch & End of Day One

**Day 2**

0730 – 0900	<b>Chemical Analysis: Spectroscopy (cont'd)</b> Raman Spectroscopy • TDL (Tunable Diode Lasers)
0900 – 0915	Break
0915 – 1100	<b>Chemical Analysis: LEL &amp; NMR</b> LEL (Lower Explosion Limit) • NMR (Nuclear Magnetic Resonance)
1100 – 1230	<b>Chemical Analysis: Oxygen Analyzers</b> Introduction • Electrochemical Oxygen Analyzer
1230 – 1245	Break
1245 – 1420	<b>Chemical Analysis: Oxygen Analyzers (cont'd)</b> Paramagnetic Oxygen Analyzer • Zirconia Oxygen Analyzer
1420 - 1430	<b>Recap</b>
1430	Lunch and End of Day Two

**Day 3**

0730 – 0900	<b>Chemical Analysis: Electrochemical Analyzers</b> Introduction • PH Analyzers
0900 – 0915	Break
0915 – 1100	<b>Chemical Analysis: Electrochemical Analyzers (cont'd)</b> Contacting Conductivity Analyzers • Toroidal Conductivity Analyzers
1100 – 1230	<b>Chemical Analysis: Electrochemical Analyzers (cont'd)</b> Ion Selective Electrodes • Other Electrochemical Techniques
1230 – 1245	Prayer and Break
1245 – 1420	<b>Chemical Analysis: Gas Chromatography</b> Process GC Theory • GC Columns
1420 - 1430	<b>Recap</b>
1430	Lunch & End of Day Three





**Day 4**

0730 – 0900	<b>Chemical Analysis: Gas Analyzers</b> GC Detectors • Column Switching and Backflushing • Interactive Audio Visual on Process GC
0900 – 0915	Break
0915 – 1100	<b>Chemical Analysis: Gas Analyzers (cont'd)</b> FID Gas Analyzers • Laser Gas Analyzers
1100 – 1230	<b>Chemical Analysis: Gas Analyzers (cont'd)</b> TCD Gas Analyzers • Other Similar Types
1230 – 1245	Break
1245 – 1420	<b>Chemical Analysis: Gas Analyzers (cont'd)</b> FT-IR Mass Spectrometer Gas Analyzer • Air Quality Monitoring
1420 - 1430	<b>Recap</b>
1430	Lunch & End of Day Four

**Day 5**

0730 – 0930	<b>Chemical Analysis: Moisture Analyzers</b> Moisture Measurement • Capacitance Based Analyzers • Wet and Dry Bulb Hygrometer Based Analyzers
0930 – 0945	Break
0945 – 1100	<b>Chemical Analysis: Moisture Analyzers (cont'd)</b> Hair Hygrometer Based Analyzers • Dew Point Hygrometer Based Analyzers
1100 – 1215	<b>Instrumentation Systems</b> Sampling Systems • Process Samples • Stack Particulates • Analyzer Safety
1215 – 1230	Break
1230 – 1345	<b>Summary &amp; Open Forum</b>
1345 -1400	<b>Course Conclusion</b>
1400 – 1415	<b>POST-TEST</b>
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**

Mari Nakintu, Tel: +971 2 30 91 714, Email: [mari1@haward.org](mailto:mari1@haward.org)