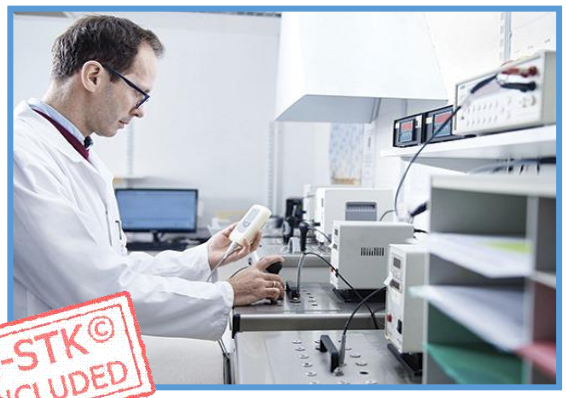
COURSE OVERVIEW LE0063
Advanced Lab Equipment Troubleshooting

Course Title
Advanced Lab Equipment Troubleshooting



Course Date/Venue
August, 04-08 2024/TBA Meeting Room, Novotel Dubai Al Barsha, Sheikh Zayed Road, Dubai, UAE

Course Reference
LE0063

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 Advanced Lab Equipment Troubleshooting. It covers the various types of laboratory equipment including spectrometers, centrifuges and chromatographs; using and interpreting manuals for troubleshooting and maintenance; the principles of logical troubleshooting steps and systematic error elimination; and the safety protocols and procedures while handling lab equipment tools including multimeters, oscilloscopes and diagnostic software.

Further, the course will also discuss the diagnosing of electrical circuits issues within laboratory instruments; identifying and fixing mechanical failures in lab equipment; reading and interpreting electrical and mechanical schematics; diagnosing equipment problems and troubleshooting common issues; the advanced electrical diagnostics, vibration analysis and control; using thermal cameras to detect overheating and insulation failures; using sound meters and frequency analyzers to diagnose problems; and assessing water and gas supply issues, software updates and firmware issues.

During this interactive course, participants will learn the calibration, common methods and solving problems related to equipment interfacing with computers and networks; checking and interpreting log files for error resolution; developing and scheduling regular maintenance to prevent equipment failures; the new technologies and equipment in laboratory setting; and troubleshooting automated systems and robotic components in labs

Course Objectives

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

- Apply and gain an advanced knowledge on lab equipment troubleshooting
- Recognize the various types of laboratory equipment including spectrometers, centrifuges and chromatographs
- Use and interpret manuals for troubleshooting and maintenance as well as discuss the principles of logical troubleshooting steps and systematic error elimination
- Apply safety protocols and procedures while handling lab equipment tools including the multimeters, oscilloscopes and diagnostic software
- Diagnose issues in electrical circuits within laboratory instruments and identify and fix mechanical failures in lab equipment
- Read and interpret electrical and mechanical schematics, diagnose equipment problems and troubleshoot common issues
- Carryout advanced electrical diagnostics, vibration analysis and control
- Use thermal cameras to detect overheating and insulation failures as well as use sound meters and frequency analyzers to diagnose problems
- Assess water and gas supply issues including software updates and firmware issues
- Apply calibration, common methods and troubleshooting calibration errors
- Solve problems related to equipment interfacing with computers and networks
- Check and interpret log files for error resolution and develop a schedule for regular maintenance to prevent equipment failures
- Discuss the new technologies and equipment in laboratory settings and troubleshoot automated systems and robotic components in labs

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, 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 provides an overview of all significant aspects and considerations of advanced lab equipment troubleshooting for laboratory managers, supervisors, engineers, scientists, chemists, analysts and other technical staff.

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: -

- 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.

- 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 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:

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**, **Analytical Chemistry**, **Advanced Electrical Diagnostics**, **Vibration Analysis**, **Microbiological Quality Assurance**, **Laboratory Competence**, **Safety Protocol**, **Quality Control** Procedures, **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 and 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**.

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 Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the workshop for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1: ***Sunday, 04th of August 2024***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Overview of Common Laboratory Equipment:*** *The Various Types of Laboratory Equipment including Spectrometers, Centrifuges & Chromatographs*
0930 – 0945	*Break*
0945 – 1030	***Understanding Equipment Manuals:*** *How to Effectively Use & Interpret Manuals for Troubleshooting & Maintenance*
1030 – 1130	***Basics of Troubleshooting Theory:*** *Principles of Logical Troubleshooting Steps & Systematic Error Elimination*
1130 – 1215	***Safety Protocols & Procedures:*** *Ensuring Personal & Workspace Safety While Handling Lab Equipment*
1215 – 1230	*Break*
1230 – 1420	***Diagnostic Tools & Their Usage:*** *Overview of Tools Like Multimeters, Oscilloscopes & Diagnostic Software*
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2: ***Monday, 05th of August 2024***

0730 – 0830	***Electrical Components & Circuits:*** *Understanding & Diagnosing Issues in Electrical Circuits within Laboratory Instruments*
0830 – 0930	***Mechanical Components & Assemblies:*** *Identifying & Fixing Mechanical Failures in Lab Equipment*
0930 – 0945	*Break*
0945 – 1100	***Schematic Reading & Analysis:*** *Learning to Read & Interpret Electrical & Mechanical Schematics*
1100 – 1215	***Use of Diagnostic Software:*** *Practical Exercises Using Software to Diagnose Equipment Problems*
1215 – 1230	*Break*
1230 – 1330	***Troubleshooting Common Issues:*** *Focusing on Frequent Electrical & Mechanical Faults*
1330 – 1420	***Case Studies:*** *Analyzing Past Equipment Failures & Successful Interventions*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3: ***Tuesday, 06th of August 2024***

0730 – 0830	***Advanced Electrical Diagnostics:*** *Techniques Like Signal Tracing & Component Testing*
0830 – 0930	***Vibration Analysis & Control:*** *Identifying & Mitigating Vibration Issues in Lab Equipment*
0930 – 0945	*Break*
0945 – 1100	***Thermal Imaging & Heat Related Issues:*** *Using Thermal Cameras to Detect Overheating & Insulation Failures*
1100 – 1215	***Frequency & Sound Analysis:*** *Using Sound Meters & Frequency Analyzers to Diagnose Problems*

1215 – 1230	*Break*
1230 – 1330	***Water & Gas Supply Issues:*** *Troubleshooting Flow & Pressure Issues in Equipment Needing Water or Gas*
1330 – 1420	***Live Troubleshooting Session:*** *Real-Time Diagnostics on Faulty Equipment Brought by Participants*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4: ***Wednesday, 07th of August 2024***

0730 – 0830	***Software Updates & Firmware Issues:*** *Updating & Troubleshooting Software-Related Problems*
0830 – 0930	***Calibration Standards & Procedures:*** *Importance of Calibration, Common Methods & Troubleshooting Calibration Errors*
0930 – 0945	*Break*
0945 – 1100	***Interfacing & Connectivity Issues:*** *Solving Problems Related to Equipment Interfacing with Computers & Networks*
1100 – 1215	***Data Integrity & Error Logging:*** *Understanding How to Check & Interpret log Files for Error Resolution*
1215 – 1230	*Break*
1230 – 1420	***Preventive Maintenance & Scheduling:*** *Developing a Schedule for Regular Maintenance to Prevent Equipment Failures*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5: ***Thursday, 08th of August 2024***

0730 – 0930	***Review of Complex Troubleshooting Cases:*** *Discussion of Complex Cases Faced by Professionals in the Field*
0930 – 0945	*Break*
0945 - 1100	***Emerging Technologies in Lab Equipment:*** *Introduction to New Technologies & Equipment in Laboratory Settings*
1100 – 1230	***Automation & Robotics Troubleshooting:*** *Troubleshooting Automated Systems & Robotic Components in Labs*
1230 – 1245	*Break*
1245 – 1345	***Quality Assurance & Compliance:*** *Ensuring Equipment Repairs & Maintenance Meet Regulatory Standards*
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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