



COURSE OVERVIEW LE0251 Oilfield Microbiology: The Fundamentals of Targeting, Testing & Treating

Course Title

Oilfield Microbiology: The Fundamentals of Targeting, Testing & Treating

Course Date/Venue

Session 1: February 17-21, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
Session 2: August 31-September 04, 2025/ Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE



Course Reference

LE0251

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 series of interactive small groups and class workshops.



This course is designed to provide participants with a detailed and up-to-date overview oil field microbiology. It covers the groups of microorganisms including bacteria, viruses, fungi, algae and protozoa; the bacterial cell structure, growth curve of bacteria, cultivation of bacteria and factors affecting bacterial growth; the aerobic and anaerobic bacteria including bacterial growth requirements in oil; the microbial ecology of oil reservoirs; and the origin of microorganisms recovered from oil reservoirs.



Further, the course will also discuss the isolation of microorganism from oil reservoirs; the culture-independent analysis of microbial communities in oil reservoir; the in-situ hydrocarbon metabolism and the importance of SRB and NRB in oil reservoirs; the SRB and NRB mitigation; monitoring the deleterious microbial activities covering hydrogen sulfide production (souring); and the current souring control approaches, microbial control of souring, microbial induced corrosion (MIC) and MIC management.





During this interactive course, participants will learn the biocides and chemical treatment; the bioremediation, *alcanivorax borkumensis*, and biosurfactants; the factors governing oil recovery and microbial activities; the products useful for oil recovery; the biogenic acid, solvent and gas production; the biosurfactant and emulsifiers; the exopolymer production and selective microbial plugging; the microbial treatment of paraffin control in crude oil pipelines; the importance of oil sampling methodologies for microbial analysis; and the current and future directions.

Course Objectives

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

- Apply and gain in-depth knowledge on oil field microbiology
- Identify the groups of microorganisms including bacteria, viruses, fungi, algae, and protozoa
- Describe bacterial cell structure, growth curve of bacteria, cultivation of bacteria and factors affecting bacterial growth
- Recognize aerobic and anaerobic bacteria including bacterial growth requirements in oil
- Discuss microbial ecology of oil reservoirs and the origin of microorganisms recovered from oil reservoirs
- Isolate microorganism from oil reservoirs and apply culture-independent analysis of microbial communities in oil reservoirs
- Recognize in-situ hydrocarbon metabolism and the importance of SRB and NRB in oil reservoirs
- Employ SRB and NRB mitigation and monitoring and deleterious microbial activities covering hydrogen sulfide production (souring)
- Implement current souring control approaches, microbial control of souring, microbial induced corrosion (MIC) and MIC management
- Apply biocides and chemical treatment and determine bioremediation, *alcanivorax borkumensis*, and biosurfactants
- Identify the factors governing oil recovery and microbial activities and products useful for oil recovery
- Discuss biogenic acid, solvent and gas production as well as biosurfactant and emulsifiers
- Describe exopolymer production and selective microbial plugging
- Employ microbial treatment of paraffin control in crude oil pipelines
- Explain the importance of oil sampling methodologies for microbial analysis including current and future directions



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 oil field microbiology for all the quality control laboratory technicians, supervisors, foremen and other 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.

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 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 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. Yousef Al-Mashni, PhD, MSc, BSc, is an International Expert in Analytical Laboratory with over 30 years of extensive experience. He is an authority in Laboratory Equipment, Laboratory Quality Management Systems (ISO 17025 and ISO 15189), Lab Safety & Health, Good Laboratory Practice (GLP) and Safety Procedure in Laboratories. His wide expertise also covers Water Analysis & Reporting, Water Sampling & Testing, Water Analyzer, Medical Laboratory Auditing, ISO 15489, Infection Control, Internal Quality Control for Microbiologists, Analytical Techniques, Biochemical, Hematological, Parasitological, Biochemical, Microbiological & Serological Analysis of Clinical Specimens, Helminth Ova & Salmonella in Waste Water & Sludge, Microbiological Aspects & Analysis of Wastewater, Microbiology of Wetlands, Microbiological Indoor Air Quality, Enterococcus, Pseudomonas & Aeromonas, Sulfate Reducing Bacteria, Fluorescence Microscopy, Planktology of Ambient Environment, Oral, Medical & Diagnostic Microbiology and Oral & Dental Hygiene. Further, he is also well-versed in the areas of Food Hygiene and HACCP, Food Safety, Food Poisoning, First Aid & CPR and Fire Safety. He is currently the Deputy Principal & Chief Technical Instructor of UNRWA wherein he is responsible in developing and managing operations at the college/centre including building workshops and laboratories capacity, curriculum development and introducing new courses.

During his long career life, Dr. Yousef worked for many international companies handling key positions such as ICDL Centre **Manager, Deputy Principal, Chief Technical Instructor, Acting Principal, Laboratory Supervisor, Technical Instructor, Technical & Vocational Instructor, Senior Medical Laboratory Technician and Medical Laboratory Technician.**

Dr. Yousef has a **PhD degree in Natural Health Sciences from the University of Florida (USA), Master degree in Clinical Microbiology and Bachelor degree with Honours in Microbiology. Further, he has Diploma in Vocational Education (UNRWA & UNESCO) and received several certifications like ICDL and Training of Trainers (TOT) in Cambridge University (England). He is a Certified Internal Verifier/Assessor/Trainer by the Institute of Leadership & Management (ILM), a Certified Instructor/Trainer and an active member of Jordan Medical Laboratories Society, Technical Accreditation Committee of Medical Laboratories (Jordan Institution & Metrology) and the Technical Accreditation Committee for Granting ISO 15189 Certificate. Furthermore, he has also published numerous technical papers and books including Medical & Diagnostic Microbiology, Practical Competencies in Medical Laboratory Technology, Safety in Medical Laboratory Science and Quality Control in Medical Laboratory Science just to name a few.**





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 to Oilfield Microbiology
0930 - 0945	Break
0945 - 1100	Groups of Microorganisms including Bacteria, Viruses, Fungi, Algae, Protozoa
1100 - 1215	Groups of Microorganisms including Bacteria, Viruses, Fungi, Algae, Protozoa (cont'd)
1215 - 1230	Break
1230 - 1420	Bacterial Cell Structure
1420 - 1430	Recap
1430	Lunch & End of Day One

Day 2

0730 - 0930	Grow of Bacteria & Its Growth Curve
0930 - 0945	Break
0945 - 1100	Cultivation of Bacteria, Factors Affection Bacterial Growth
1100 - 1215	Aerobic & Anaerobic Bacteria
1215 - 1230	Break
1230 - 1420	Bacterial Growth Requirements in Oil
1420 - 1430	Recap
1430	Lunch & End of Day Two

Day 3

0730 - 0830	Microbial Ecology of Oil Reservoirs
0830 - 0930	Origins of Microorganisms Recovered from Oil Reservoirs
0930 - 0945	Break
0945 - 1030	Microorganisms Isolated from Oil Reservoirs
1030 - 1100	Culture-independent Analysis of Microbial Communities in Oil Reservoirs
1100 - 1215	In-situ Hydrocarbon Metabolism
1215 - 1230	Break
1230 - 1330	Overview & Importance of SRB & NRB in Oil Reservoirs
1330 - 1420	SRB & NRB Mitigation & Monitoring
1420 - 1430	Recap
1430	Lunch & End of Day Three





Day 4

0730 – 0930	<i>Deleterious Microbial Activities, Hydrogen Sulfide Production (Souring)</i>
0930 – 0945	<i>Break</i>
0945 – 1030	<i>Current Souring Control Approaches</i>
1030 - 1115	<i>Microbial Control of Souring</i>
1115 - 1200	<i>Microbial Induced Corrosion (MIC)</i>
1200 - 1230	<i>MIC Management</i>
1230 - 1245	<i>Break</i>
1245 – 1300	<i>Application of Biocides & Chemical Treatment</i>
1300 -1420	<i>Bioremediation, Alcanivorax Borkumensis, & Biosurfactants</i>
1420 – 1430	<i>Recap</i>
1430	<i>Lunch & End of Day Four</i>

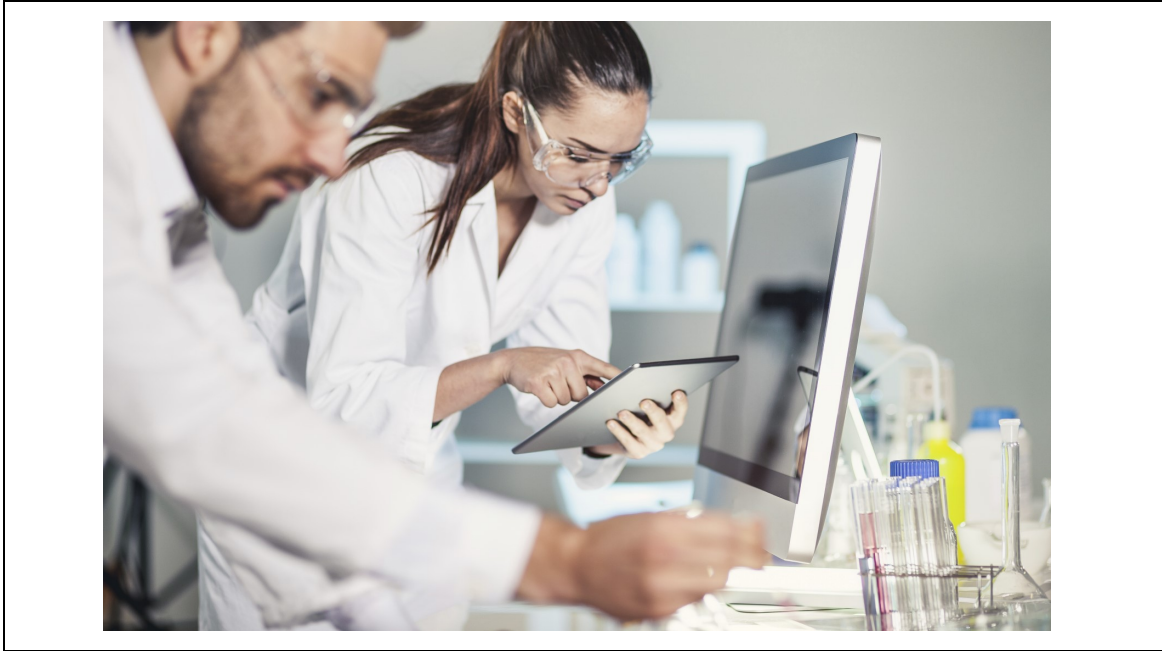
Day 5

0730 – 0830	<i>Factors Governing Oil Recovery</i>
0830 -0930	<i>Microbial Activities & Products Useful for Oil Recovery</i>
0930 – 0945	<i>Break</i>
0945 - 1015	<i>Biogenic Acid, Solvent, & Gas Production</i>
1015 - 1100	<i>Biosurfactants & Emulsifiers</i>
1100 – 1130	<i>Exopolymer Production & Selective Microbial Plugging</i>
1130 - 1215	<i>Microbial Treatment of Paraffin Control in Crude Oil Pipelines</i>
1215 – 1230	<i>Break</i>
1230 – 1300	<i>Overview & Importance of Oil Sampling Methodologies for Microbial Analysis</i>
1300 -1345	<i>Current & Future Directions</i>
1345 – 1400	<i>Course Conclusion</i>
1400 – 1415	<i>POST-TEST</i>
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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