



COURSE OVERVIEW DE0745-4D Basic Geology

Course Title

Basic Geology

Course Date/Venue

October 21-24, 2024/ Al Aziziya Hall, The Proud Hotel Al Khobar, Al Khobar, KSA

Course Reference

DE0745-4D

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.



This course is designed to provide participants with a detailed and up-to-date overview of the basic geology. It covers the geology and earth science that includes structure of earth and evolution of earth; the geological time scale and earth surface; the rock types and cycling comprising of igneous rocks/volcanic and volcanism, metamorphic rocks, sedimentary rocks/sedimentary process and rock cycling; and the structural geology, the primary structures, stresses/strains and their relations to rock deformation and the faults fractures and unconformities of secondary structures.



Further, the course will also discuss the petroleum and petroleum system process; the origin and occurrence of petroleum including the principal forms of petroleum and unconventional resources; the petroleum system elements covering petroleum source rocks, cap rocks, reservoir rocks and rock property analysis; the exploration techniques for petroleum including geophysical methods, geochemical methods, subsurface methods and exploration application; and the drilling methods and techniques for vertical wells, deviated wells and horizontal wells.



During this interactive course, participants will learn well casing, cementing, well completion, stimulation, fracking and oil refinery; monitoring the well while drilling; the mud logging, log time calculation, rate penetration and its implementation, sample collection and preparation; the ditch sample, hydrocarbon and gas shows evaluation; monitoring the well post drilling and the wireline operations and logging while drilling operations; and the logging tools, basic petrophysical terminology, petrophysical interpretation and petroleum field cycle

Course Objectives

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

- Apply and gain a basic knowledge on geology
- Discuss the geology and earth science covering the structure of earth and evolution of earth
- Describe geological time scale and earth surface
- Identify the rock types and cycling comprising of igneous rocks/volcanic and volcanism, metamorphic rocks, sedimentary rocks/sedimentary process and rock cycling
- Explain structural geology and identify the primary structures, stresses/strains and their relations to rock deformation and the faults fractures and unconformities of secondary structures
- Carryout petroleum and petroleum system process and discuss the origin and occurrence of petroleum including the principal forms of petroleum and unconventional resources
- Recognize petroleum system elements covering petroleum source rocks, cap rocks, reservoir rocks and rock property analysis
- Implement exploration techniques for petroleum including geophysical methods, geochemical methods, subsurface methods and exploration application
- Employ drilling methods and techniques for vertical wells, deviated wells and horizontal wells
- Carryout well casing, cementing, well completion, stimulation, fracking and oil refinery
- Monitor a well while drilling and apply mud logging, log time calculation, rate penetration and its implementation, sample collection and preparation
- Illustrate ditch sample, hydrocarbon and gas shows evaluation
- Monitor well post drilling and apply wireline operations and logging while drilling operations
- Discuss logging tools, basic petrophysical terminology, petrophysical interpretation and petroleum field cycle

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 basic geology for engineering, geophysical and technical personnel who are in need of basic geological training including support and administrative personnel. The course is also beneficial for well-site geologists, drilling and operation engineers and other staff involved in the acquisition and use of well-site (geological) data.

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:-

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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:



Mr. Saber Hussein is a **Senior Geologist** with **over 40 years** of extensive experience within the **Oil & Gas, Petrochemical** and **Refinery** industries. His specialization widely covers in the areas of **Exploration & Development Geology, Petroleum Geology, Exploration Production, Structural Geology, Wellsite Geology, Reservoir Management, Reservoir Appraisal & Development, Carbonate Reservoir Management, Fractured Reservoirs Evaluation & Management, Naturally Fractured Reservoir, Integrated Carbonate Reservoir Characterization, Core & Log Integration, Water Saturation, Coring & Core Analysis, Special Core Analysis, Log Interpretation, Cased-hole Logging, Core Calibration, Geological Modelling for Integrated Reservoir Studies, Reservoir Characterization, Geomodelling, Geologic Modelling, Analytic Modelling Methods, Economic Evaluation, Geophysics, Geophysical Exploration, Advanced Petrophysics, Petroleum Exploration, Petroleum Economics, Petroleum Engineering, Reservoir Modelling, Reserve Estimation, Reserve Evaluation, Uncertainty Calculations, Reservoir Management, Reservoir Engineering, Tectonics & Structural Development, Petroleum Systems, Reservoir Characterization, Clastic Reservoir, Carbonate Reservoir, Subsurface Facies Analysis, Borehole Images, Geophysical Methods, Oil & Gas Exploration, Exploration Geochemistry, Reservoir Performance Using Classical Methods, Fractured Reservoir Evaluation & Management, Reservoir Surveillance & Management, Reservoir Engineering & Stimulation, Reservoir Monitoring, Pressure Transient Testing & Reservoir Performance Evaluation, Reservoir Characterization, Reservoir Engineering Applications, Reservoir Volumetrics, Water Drive Reservoir, Reservoir Evaluation, Wireline Logging, Mud Logging, Cased Hole Logging, Production Logging, Slick Line, Coil Tubing, Horizontal Wells, Well Surveillance, Well Testing, Design & Analysis, Well Testing & Oil Well Performance, Well Log Interpretation (WLI), Formation Evaluation, Well Workover Supervision, Pressure Transient Analysis, Petrophysical Log Analysis, Drilling, Core Analysis, Core-to-Log Data Integration (SCAL), Basin Modelling & Total Petroleum System (TPS), Seismic Interpretation, Seismic Methods, Seismic Coherence Techniques, Seismic Attribute Analysis, Seismic Inversion Techniques, Well Logging, Rock Physics & Seismic Data, Formation Evaluation, Well Testing & Data Interpretation, Pore Pressure Prediction and Oil & Gas Reserves Estimations.**

During his career life, Mr. Saber has gained his practical and field experience through his various significant position and dedication as the **Exploration General Manager & Board Member, Geology General Manager, Geological Studies Assistant General Manager, Mud Logging Assistant General Manager, Geological Operations Department Head, Geological Operations Section Head, Geologist, Well-Site Geologist, Mud Logger, Pressure Engineer, Expert and Senior Technical Consultant/Instructor** for various international companies such as the Suez Oil Company, DECO, DISUCO, Segulled, Geoline, Ltd.

Mr. Saber has a **Bachelor** degree in **Geology**. Further, he is a **Certified Instructor/Trainer** and an active member of Egyptian Petroleum Exploration Society (**EPEX**), American Association of Petroleum Geologists (**AAPG**), Government Sponsored Enterprise (**GSE**) and the Petroleum and Scientific Professional Syndicate. He has further delivered numerous trainings, courses, seminars and conferences internationally.



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\$ 6,750 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 21st of October 2024

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	Introduction Objectives & Outlines of the Course • Free Discussion
0830 – 0930	Introduction to Geology & Earth Science Overview on Earth • Structure of Earth (Hydrosphere, Atmosphere, Geosphere & Biosphere) • Evolution of Earth (Nebular Hypothesis – Plate Tectonic)
0930 – 0945	Break
0945 – 1100	Geological Time Scale
1100 – 1230	Representing of Earth Surface
1230 – 1245	Break
1245 – 1420	Rock Types & Cycling Igneous Rocks/Volcanic & Volcanism • Metamorphic Rocks • Sedimentary Rocks/Sedimentary Process • Rock Cycling
1420 - 1430	Recap
1430	Lunch & End of Day One

Day 2: Tuesday 22nd of October 2024

0730 – 0900	Structural Geology Introduction to Structural Geology • Primary Structures • Stresses/Strains & their Relations to Rock Deformation
0900 – 0915	Break





0915 – 1230	Structural Geology (cont'd) Secondary Structures (Faults Fractures & Unconformities)
1230 – 1245	Break
1245 – 1320	Petroleum & Petroleum System Process Definition • Petroleum (Origin/Occurrence) • Kerogen (Definition, Formation)
1320 – 1420	Petroleum & Petroleum System Process (cont'd) Petroleum (Migration, Accumulation & Timing) • Principal Forms of Petroleum & Unconventional Resources
1420 - 1430	Recap
1430	Lunch & End of Day Two

Day 3: Wednesday 23rd of October 2024

0730 – 0930	Petroleum System Elements Petroleum Source Rocks • Petroleum Cap Rocks • Petroleum Reservoir Rocks • Rock Property Analysis
0930 – 0945	Break
0945 – 1100	Exploration Techniques for Petroleum Introduction to Exploration Techniques • Geological Concept & Surface Geology • Geophysical Methods (Gravity, Magnetic & Seismic)
1100 – 1215	Exploration Techniques for Petroleum (cont'd) Geochemical Methods • Subsurface Methods • Exploration Application
1215 – 1230	Break
1230 – 1420	Drilling Methods & Techniques Vertical Wells • Deviated Wells & Horizontal Wells • How to Drill a Well? • Drilling Problems • Well Casing & Cementing • Well Completion & Stimulation • Fracking • Oil Refinery
1420 - 1430	Recap
1430	Lunch & End of Day Three

Day 4: Thursday 24th of October 2024

0730 – 0930	Monitoring a Well While Drilling Mud Logging • Lag Time Calculation • Rate of Penetration & it's Interpretation • Sample Collection & Preparation • Ditch Sample Evaluation • Hydrocarbon & Gas Shows Evaluation
0930 – 0945	Break
0945 – 1100	Monitoring a Well Post Drilling Introduction to Petrophysics • Wireline Operations • Logging While Drilling Operations
1100 – 1215	Monitoring a Well Post Drilling (cont'd) Logging Tools • Basic Petrophysical Terminology • Petrophysical Interpretation
1215 – 1230	Break
1230 – 1345	Petroleum Field Life Cycle
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 the real-life case studies and exercises: -



Course Coordinator

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