

**COURSE OVERVIEW DE0321**  
**Applied Biostratigraphy & Sequence Stratigraphy in**  
**Oil Exploration & Development**

**Course Title**

Applied Biostratigraphy & Sequence Stratigraphy in Oil Exploration & Development

**Course Date/Venue**

Session 1: February 02-06, 2025/Boardroom 1,  
Elite Byblos Hotel Al Barsha, Sheikh  
Zayed Road, Dubai, UAE

Session 2: September 15-19, 2025/Fujairah  
Meeting Room, Grand Millennium Al  
Wahda Hotel, Abu Dhabi, UAE



**H-STK<sup>®</sup>**  
**INCLUDED**

**Course Reference**

DE0321

**Course Duration/Credits**

Five days/3.0 CEUs/30 PDHs



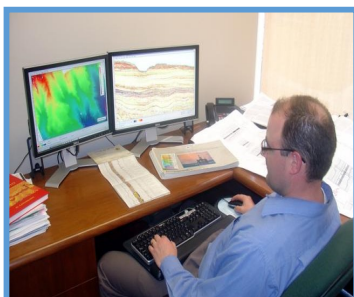
**Course Description**



***This hands-on, 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 applied biostratigraphy and sequence stratigraphy in oil exploration and development. It covers the laws of stratigraphy, age dating methods for sediments and igneous rocks, stratigraphical column and chronostratigraphy; the different microfossil groups and preparation techniques as well as organic microfossils and inorganic microfossils; the microfossil evolution; the first downhole occurrence, last downhole, fossil assemblages, numerical methods, frequency polygons, abundance increases and maxima; and the index fossils, stratigraphical type sections and the relation between biostratigraphy and chronostratigraphy.



Further, the course will also discuss the biostratigraphical cross section and datum selection; avoiding pitfalls using biostratigraphical data, downhole caving, reworking and contamination; the biozones, integrate sedimentological and petrographical data and geochemical information; the unconformities/hiatus in the sequence; the biostratigraphy, paleoenvironment's and seismic sequence stratigraphy; the micropaleontology for paleoenvironmental interpretation; and the marine microfossils versus non-marine microfossils.

During this interactive course, participants will learn the preservation of microfossil groups and different lithology's; the water depth from the different fossil groups; the sequence boundaries using biostratigraphical data to identify condensed sequence, maximum flooding surfaces, lowstand system and high stand system tracts; the biostratigraphical data and seismic sequence stratigraphy; the resolution related to the geology and the limitations; the play based exploration techniques; and the hydrocarbon play definition and integrated biostratigraphy including its use in play based exploration techniques.

### **Course Objectives**

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

- Apply and gain an in-depth knowledge on applied biostratigraphy and sequence stratigraphy in oil exploration and development
- Discuss the laws of stratigraphy, age dating methods for sediments and igneous rocks, stratigraphical column and chronostratigraphy
- Identify the different microfossil groups and preparation techniques as well as organic microfossils and inorganic microfossils
- Describe microfossil evolution through the stratigraphical column and build stratigraphical range charts
- Determine first downhole occurrence, last downhole, fossil assemblages, numerical methods, frequency polygons, abundance increases and maxima
- Identify index fossils, stratigraphical type sections and the relation between biostratigraphy and chronostratigraphy
- Build a biostratigraphical cross section and datum selection as well as avoid pitfalls using biostratigraphical data, downhole caving, reworking and contamination
- Define biozones, integrate sedimentological and petrographical data and geochemical information as well as identify unconformities/hiatus in the sequence
- Discuss the biostratigraphy, paleoenvironment's and seismic sequence stratigraphy
- Use micropaleontology for paleoenvironmental interpretation and differentiate marine microfossils versus non-marine microfossils
- Preserve microfossil groups and different lithology's
- Define water depth from the different fossil groups and identify sequence boundaries using biostratigraphical data to identify condensed sequence, maximum flooding surfaces, lowstand system and high stand system tracts
- Integrate biostratigraphical data and seismic sequence stratigraphy and discuss the resolution related to the geology and the limitations
- Carryout play based exploration techniques and explain hydrocarbon play definition and integrated biostratigraphy including its use in play based exploration techniques

### **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 a basic overview of all significant aspects and considerations of applied biostratigraphy & sequence stratigraphy in oil exploration & development for exploration geologists, development geologists, seismic interpreters, sedimentologists, and upstream subsurface professionals who are interested in optimally utilizing geological data as a predictive tool in sedimentary basins and for identifying hydrocarbon plays in active petroleum systems.

### **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\$ 8,000** per Delegate + **VAT**. The 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 who completed a minimum of 80% of the total tuition hours.


**Certificate Accreditations**

Certificates are accredited by the following international accreditation organizations:-



**British Accreditation Council (BAC)**

Howard 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, Howard Technology meets all of the international higher education criteria and standards set by BAC.

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**USA International Association for Continuing Education and Training (IACET)**

Howard Technology is an Authorized Training Provider by the International Association for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Howard Technology has demonstrated that it complies with the **ANSI/IACET 1-2013 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Howard Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 1-2013 Standard**.

Howard 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 Association 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.

Howard 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 Howard Technology programs. A permanent record of a participant’s involvement and awarding of CEU will be maintained by Howard Technology. Howard 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:



**Ms. Diana Helmy**, PgDip, MSc, BSc, is a **Senior Petroleum & Geologist** with extensive years of experience within the **Oil & Gas, Refinery and Petrochemical** industries. Her expertise widely covers in the areas of **Tubular & Pipe Handling, Tubular Strength, Casing & Tubing Design, Production/Injection Loads** for Casing Strings & Tubing, **Drilling Loads, Drilling & Production Thermal Loads, Well Architecture, Wellhead Integrity, Well Integrity & Artificial Lift, Well Integrity**

**Management, Well Completion & Workover, Applied Drilling Practices, Horizontal Drilling, Petroleum Production, Resource & Reserve Evaluation, Reserves Estimation & Uncertainty, Methods for Aggregation of Reserves & Resources, Horizontal & Multilateral Wells, Well Completion & Stimulation, Artificial Lift System Selection & Design, Well Testing & Oil Well Performance, Well Test Design Analysis, Well Test Operations, Well Testing & Perforation, Directional Drilling, Formation Damage Evaluation & Preventive, Formation Damage Remediation, Drilling & Formation Damage, Simulation Program for The International Petroleum Business, Well Testing & Analysis, Horizontal & Multilateral Wells & Reservoir Concerns, Oil & Gas Analytics, Petrophysics & Reservoir Engineering, Subsurface Geology & Logging Interpretation, Petroleum Geology, Geophysics, Seismic Processing & Exploration, Seismic Interpretation, Sedimentology, Stratigraphy & Biostratigraphy, Petroleum Economy, Core Analysis, Well Logging Interpretation, Core Lab Analysis & SCAL, Sedimentary Rocks, Rock Types, Core & Ditch Cuttings Analysis, Clastic, Carbonate & Basement Rocks, Stratigraphic Sequences, Petrographically Analysis, Thin Section Analysis, Scanning Electron Microscope (SEM), X-ray Diffraction (XRD), Cross-Section Tomography (CT), Conventional & Unconventional Analysis, Porosity & Permeability, Geological & Geophysical Model, Sedimentary Facies, Formation Damage Studies & Analysis, Rig Awareness, 2D&3D Seismic Data Processing, Static & Dynamic Correction, Noise Attenuation & Multiple Elimination Techniques, Velocity Analysis & Modeling and various software such as Petrel, OMEGA, LINUX, Kingdom and Vista. She is currently a **Senior Consultant** wherein she is responsible in different facets of **Petroleum & Process Engineering** from managing **asset integrity, well integrity process, pre-commissioning/commissioning and start up** onshore & offshore process facilities.**

During her career life, Ms. Diana worked as a **Reservoir Geologist, Seismic Engineer, Geology Instructor, Geoscience Instructor & Consultant** and **Petroleum Geology Researcher** from various international companies like the **Schlumberger, Corex Services for Petroleum Services, Petrolia Energy Supplies** and Alexandria University.

Ms. Diana has a **Postgraduate Diploma in Geophysics, Master's degree in Petroleum Geology and Geophysics** and a **Bachelor's degree in Geology**. Further, she is a **Certified Trainer/Assessor/Internal Verifier** by the **Institute of Leadership & Management (ILM)** and has delivered numerous trainings, courses, workshops, seminars and conferences internationally.

### 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	<i>Registration &amp; Coffee</i>
0800 – 0815	<i>Welcome &amp; Introduction</i>
0815 – 0830	<b>PRE-TEST</b>
0830 – 0930	<b><i>Stratigraphy &amp; An Introduction to Micropaleontology</i></b>
0930 – 0945	<i>Break</i>
0945 – 1030	<b><i>The Laws of Stratigraphy</i></b>
1030 – 1100	<b><i>Age Dating Methods for Sediments &amp; Igneous Rocks</i></b>
1100 – 1130	<b><i>The Stratigraphical Column &amp; Chronostratigraphy</i></b>
1130 – 1200	<b><i>The Different Microfossil Groups and Preparation Techniques</i></b>
1200 – 1230	<b><i>Organic Microfossils (Palynomorphs) Including Acritarchs, Chitinozoans, Dinoflagellates, Pollen &amp; Spores</i></b>
1230 – 1245	<i>Break</i>
1245 – 1330	<b><i>Inorganic Microfossils Including Microforaminifera &amp; Ostracoda</i></b>
1330 – 1420	<b><i>Biostratigraphy</i></b>
1420 – 1430	<b>Recap</b>
1430	<i>Lunch &amp; End of Day One</i>

#### **Day 2**

0730 – 0930	<b><i>Microfossil Evolution Through the Stratigraphical Column</i></b>
0930 – 0945	<i>Break</i>
0945 – 1030	<b><i>Building Stratigraphical Range Charts</i></b>
1030 – 1100	<b><i>First Downhole Occurrence, Last Downhole Occurrence, Fossil Assemblages</i></b>
1100 – 1130	<b><i>Numerical Methods, Frequency Polygons, Abundance Increases &amp; Maxima</i></b>
1130 – 1200	<b><i>Index Fossils</i></b>
1200 – 1230	<b><i>Stratigraphical Type Sections &amp; The Relation Between Biostratigraphy &amp; Chronostratigraphy</i></b>
1230 – 1245	<i>Break</i>
1245 – 1330	<b><i>Biostratigraphical Correlations &amp; Correlation Techniques</i></b>
1330 – 1420	<b><i>Building a Biostratigraphical Cross Section, Datum Selection</i></b>
1420 – 1430	<b>Recap</b>
1430	<i>Lunch &amp; End of Day Two</i>

#### **Day 3**

0730 – 0930	<b><i>Pitfalls Using Biostratigraphical Data, Downhole Caving, Reworking, Contamination</i></b>
0930 – 0945	<i>Break</i>
0945 – 1030	<b><i>Definition of Biozones</i></b>
1030 – 1100	<b><i>Integration of Sedimentological &amp; Petrographical Data</i></b>
1100 – 1130	<b><i>The Integration of Geochemical Information</i></b>
1130 – 1200	<b><i>Identification of Unconformities / Hiatus in The Sequences</i></b>
1200 – 1230	<b><i>Biostratigraphy, Paleoenvironment's &amp; Seismic Sequence Stratigraphy</i></b>

1230 – 1245	Break
1245 – 1330	<i>Using Micropalaeontology for Palaeoenvironmental Interpretation</i>
1330 – 1420	<i>Marine Microfossils Versus Non-Marine Microfossils</i>
1420 – 1430	<b>Recap</b>
1430	<i>Lunch &amp; End of Day Three</i>

#### Day 4

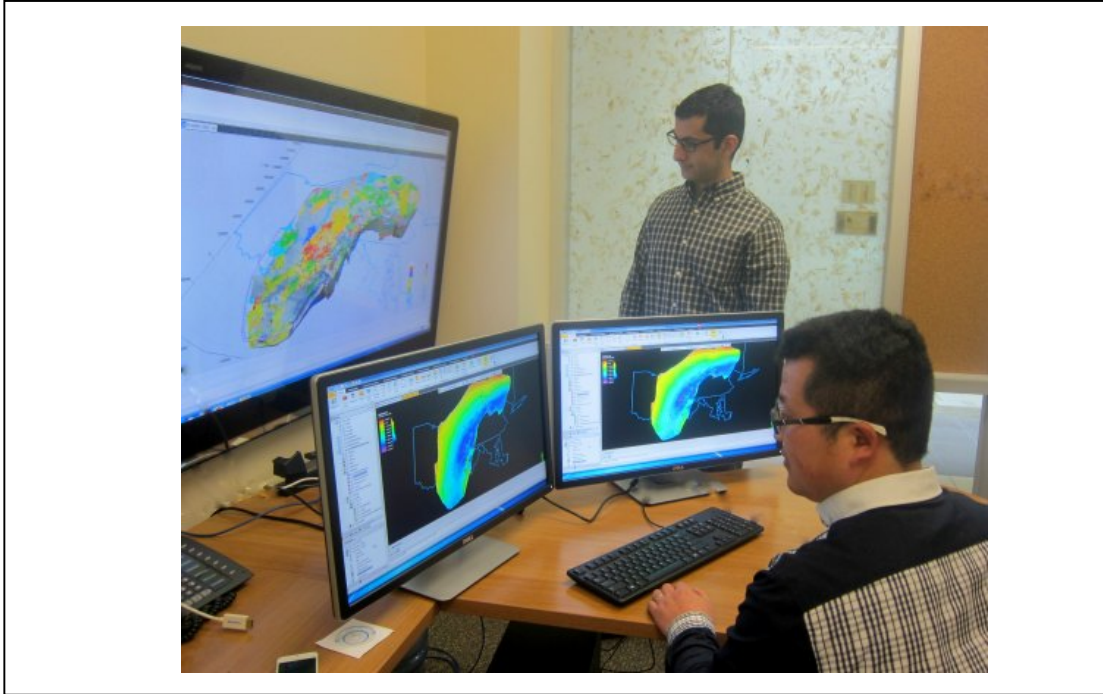
0730 – 0930	<i>Preservation of Microfossil Groups &amp; Different Lithology's</i>
0930 – 0945	Break
0945 – 1100	<i>Definition of Water Depth from the Different Fossil Groups</i>
1100 – 1130	<i>The Identification of Sequence Boundaries Using Biostratigraphical Data</i>
1130 – 1200	<i>Using Biostratigraphical Data to Identify Condensed Sequences &amp; Maximum Flooding Surfaces</i>
1200 – 1230	<i>Using Biostratigraphical Data to Identify Lowstand System &amp; High Stand System Tracts</i>
1230 – 1245	Break
1245 – 1330	<i>Integration of Biostratigraphical Data &amp; Seismic Sequence Stratigraphy</i>
1330 – 1420	<i>The Pitfalls, Understanding the Resolution Related to The Geology &amp; The Limitations</i>
1420 – 1430	<b>Recap</b>
1430	<i>Lunch &amp; End of Day Four</i>

#### Day 5

0730 – 0830	<i>Play Definition Using Play Based Exploration Techniques &amp; Examples of The Use of Biostratigraphy in Exploration &amp; Development</i>
0830 – 0930	<i>Hydrocarbon Play Definition – What is a Play</i>
0930 – 0945	Break
0945 – 1100	<i>Integrated Biostratigraphy &amp; Its Use in Play Based Exploration Techniques</i>
1100 – 1130	<i>The Kalash Formation A Late Cretaceous Shelfal Carbonate Play NW Sirt Basin, Libya</i>
1130 – 1200	<i>The Kareem Formation A Sub Marine Miocene Fan Play, Gulf of Suez, Egypt</i>
1200 – 1230	<i>A Middle Miocene Lacustrine Fan/Delta Play, Kra Basin, Gulf of Thailand, Thailand</i>
1230 – 1245	Break
1245 – 1345	<i>Examples of The Use of Biostratigraphy in Development in Libya, Thailand, Ivory Coast</i>
1345 – 1400	<b>Course Conclusion</b>
1400 – 1415	<b>POST-TEST</b>
1415 – 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch &amp; End of Course</i>

**Practical Sessions**

This hands-on, highly-interactive course includes real-life case studies and exercises:-



**Course Coordinator**

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