COURSE OVERVIEW DE0303
Reservoir Characterization

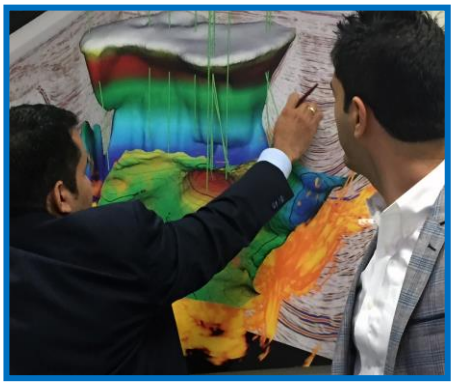
Course Title
Reservoir Characterization

Course Date/Venue
Please refer to page 3

Course Reference
DE0303

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 a series of interactive small groups and class workshops.

This course is designed to provide participants with a detailed and an up-to-date overview of the Reservoir Characterization: A Multi-Disciplinary Team Approach. It covers the importance of a multi-disciplinary team approach in reservoir characterization; integrating geology, geophysics and engineering; the technology in reservoir characterization; the data types and quality control; the static models and the geostatistical methods in static modeling; the rock typing and petrophysical analysis; the structural modeling and fault representation; the 3D geological model building; and the integration of core and log data in static models.

Further, the course will also discuss the dynamic models and reservoir simulation grids; the fluid properties and PVT (Pressure-Volume-Temperature) analysis; the history matching and calibration and production forecasting using dynamic models; the sensitivity analysis in dynamic models and reserve estimation methods; identifying and evaluating by-passed pay zones; and the strategies for reducing development time and costs.

During this interactive course, participants will learn the production enhancement techniques; the rejuvenation of old fields through integrated approaches; the integration of static and dynamic models for field development planning; the risk assessment and uncertainty analysis in reservoir characterization; the role of emerging technologies (AI, Machine Learning, etc.) in reservoir characterization; the challenges and solutions in a multi-disciplinary team approach; and the best practices and lessons learned in reservoir characterization and future trends.

Course Objectives

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

- Apply and gain an in-depth knowledge on reservoir characterization in a multidisciplinary team approach
- Use the multi-disciplinary team approach to reservoir characterization to interpret productive zones more reliably through the integration of disciplines, technology and data
- Increase your proven reserves, discover by-passed pay, reduce development time and costs, improve production rates, and rejuvenate old fields
- Develop static and dynamic models based on the application of state-of-the art technical applications within the framework of a multi-disciplinary team approach
- Discuss the importance of a multi-disciplinary team approach in reservoir characterization
- Integrate geology, geophysics and engineering as well as develop technology in reservoir characterization
- Identify data types and quality control and static models
- Carryout geostatistical methods in static modeling as well as rock typing and petrophysical analysis
- Describe structural modeling and fault representation as well as illustrate 3D geological model building
- Integrate core and log data in static models and explain dynamic models and reservoir simulation grids
- Analyze fluid properties and PVT (Pressure-Volume-Temperature)
- Examine history matching and calibration and carryout production forecasting using dynamic models
- Carryout sensitivity analysis in dynamic models and reserve estimation methods
- Identify and evaluate by-passed pay zones and implement the strategies for reducing development time and costs
- Apply systematic production enhancement techniques and rejuvenate old fields through integrated approaches
- Integrate static and dynamic models for field development planning
- Evaluate risk assessment and uncertainty analysis in reservoir characterization

- Explain the role of emerging technologies (AI, Machine Learning, etc.) in reservoir characterization
- Carryout the challenges and solutions in a multi-disciplinary team approach
- Implement best practices and lessons learned in reservoir characterization and future trends

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 reservoir characterization for reservoir engineers geologists, petrophysicists and geophysicists.

Course Date/Venue

Session(s)	Date	Venue
1	February 18-22, 2024	Boardroom, Warwick Hotel Doha, Doha, Qatar
2	May 19-23, 2024	
3	October 13-17, 2024	
4	December 22-26, 2024	

Course Fee

US$ 8,500 per Delegate. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

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 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.

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 Petrus, PhD, MSc, BSc, is a **Senior Reservoir Engineer & Geologist** with over **30 years** of **onshore & offshore** experience within the **Oil & Gas**, **Refinery** and **Petroleum** industries. His wide experience covers in the areas of **Production Technology** & Engineering, **Well Completions**, **Well Logs**, **Well Stimulation** & **Production Logging**, **Well Completion** Design & Operation, Well Surveillance, **Well Testing**, **Well Stimulation** & Control and **Workover** Planning, **Completions & Workover**, Hole Cleaning & Logging, Servicing and **Work-Over** Operations, **Wellhead** Operations, Maintenance & Testing, Petrophysics/Interpretation of Well Composite, **Reservoir & Tubing** Performance, Practical **Reservoir** Engineering, Clastic **Exploration & Reservoir Sedimentology**, **Carbonate Reservoir Characterization** & Modeling, **Seismic Interpretation**, **Mapping & Reservoir** Modelling, **Reservoir Geology**, Integrating **Geoscience** into **Carbonate Reservoir** Management, **Faulted & Fractured Reservoirs**, **Fractured Hydrocarbon Reservoirs**, Analyses, Characterisation & Modelling of **Fractured Reservoirs & Prospects**, **Fracture Reservoir** Modeling Using **Petrel**, **Reservoir** Engineering Applied Research, **Artificial Lift**, **Artificial Lift System** Selection & Design, Electrical Submersible Pumps (**ESP**), Enhance Oil Recovery (**EOR**), **Hydraulic Fracturing**, **Sand Control** Techniques, **Perforating** Methods & Design, **Perforating** Operations, **Petroleum** Exploration & Production, **Hydrocarbon Exploration** & Production, Exploration & Production, **Play Assessment & Prospect Evaluation**, **Formation** Evaluation, **Petroleum Engineering** Practices, **Petroleum** Hydrogeology & Hydrodynamics, **Project** Uncertainty, Decision Analysis & Risk Management, **Decision Analysis & Uncertainty** Management, **Exploration & Development Geology**, **Sedimentology & Sequence Stratigraphy**, **Structural Interpretation** in Exploration & Development, **Petrel Geology**, **Geomodeling**, **Structural Geology**, **Applied Structural Geology** in Hydrocarbon Exploration, **Petrophysics**, **Geology** of the Oil & Gas Field, **Geophysics**, **Geothermal**, **Geochemical & Geo-Engineering** and Drilling Applied Research, Field Geological Outcrop Mapping & Digital Cartography, **Geological** Modelling, **Geoscience** Management in E&P, Geoscience Modelling, Geological Mapping, **Structural Geology-Tectonics**, **Structural** Analysis, **Tectonic Modelling** and Numerical Simulation of **Fractured Prospects & Reservoirs**, **Fracture Network** Analysis & Modelling, **Prospect** Generation, Global Networking, Research and Technology Development Management for **Fault & Fracture Analyses** & Modelling, **Fracture** Modelling, **Dynamic** Modelling, **Field Development** Planning, **Water Injection** Planning, Stereophotogrammetry, Fault Mapping, GPS Survey, 2D & 3D **Seismic Acquisition** & Processing, **3D Seismic** Surveys & Mapping, 3D GIS, GMAP, **Sandbox** Modelling, Sedimentological Logging, GR Logging, Surface & Subsurface 3D Modelling, Best Practices Management System (**BPMS**), Subsurface Work for Energy Projects, Digitalization Projects, **Structural Model** using **Petrel**, G&G Seismic & **Well Data** Modelling, **GIS System** Management, **Database** Management, Strategic Planning, Best Practices and Workflow, **Quality** Management, **Project** Management and **Risk Assessment** & Uncertainty Evaluation. Further, he is also well-versed in **seismic interpretation**, **mapping** & **reservoir modelling tools** like **Petrel** software, **LandMark**, **Seisworks**, **Geoframe**, **Zmap** and has extensive knowledge in MSDos, Unix, **AutoCAD**, MAP, Overlay, Quicksurf, 3DStudio, **Esri ArcGIS**, Visual Lisp, Fortran-77 and Clipper. Moreover, he is a world **expert** in **analysis** and **modelling** of **fractured prospects** and **reservoirs** and a **specialist** and **developer** of **fracture modelling software tools** such as FPDM, FMX and DMX Protocols.

During his career life, Dr. Petrus held significant positions and dedication as the **Executive Director**, **Senior Geoscience Advisor**, **Exploration Manager**, **Project Manager**, **Manager**, **Chief Geologist**, **Chief** of **Exploration**, **Chief** of **Geoscience**, **Senior Geosciences Engineer**, **Senior Explorationist**, **Senior Geologist**, **Geologist**, **Senior Geoscientist**, **Geomodeller**, **Geoscientist**, **CPR Editor**, **Resources Auditor**, **Project Leader**, **Technical Leader**, **Team Leader**, **Scientific Researcher** and **Senior Instructor/Trainer** from various international companies and universities such as the Dragon Oil Holding Plc., ENOC, MENA, ENI Group of Companies, Ocre Geoscience Services (OGS), Burren RPL, Ministry of Oil-Iraq, Eni Corporate University, Standford University, European Universities, European Research Institutes, NorskHydro Oil Company, Oil E&P Companies, just to name a few.

Dr. Petrus has a **PhD** in **Geology** and **Tectonophysics** and **Master**'**s** and **Bachelor**'**s** degree in **Earth Sciences** from the **Utrecht University**, **The Netherlands**. Further, he is a **Certified Instructor/Trainer**, a **Certified Trainer/Assessor/Internal Verifier** by the **Institute of Leadership & Management** (**ILM**), a Secretary and Treasurer of Board of Directors of Multicultural Centre, Association Steunfonds SSH/SSR and Founding Member of Sfera Association. He has further published several scientific publications, journals, research papers and books and delivered numerous trainings, workshops, courses, 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	*Registration & Coffee*
0800– 0830	*Welcome & Introduction*
0830 – 0845	***PRE-TEST***
0845 – 0900	***Overview of Reservoir Characterization***
0900 – 0930	***Importance of a Multi-Disciplinary Team Approach***
0930 – 0945	*Break*
0945– 1045	***Integrating Geology, Geophysics & Engineering***
1045 – 1200	***Technology in Reservoir Characterization***
1200 – 1215	*Break*
1215 – 1300	***Data Types & Quality Control***
1300 – 1420	***Case Study:*** *Productive Zone Interpretation through Multi-Disciplinary Approach*
1420– 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0830	***Introduction to Static Models***
0830– 0930	***Geostatistical Methods in Static Modeling***
0930 – 0945	*Break*
0945– 1100	***Rock Typing & Petrophysical Analysis***
1100 – 1200	***Structural Modeling & Fault Representation***
1200 – 1215	*Break*
1215 – 1300	***3D Geological Model Building***
1300 – 1420	***Integration of Core & Log Data in Static Models***
1420– 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0830	***Introduction to Dynamic Models***
0830– 0930	***Reservoir Simulation Grids***
0930 – 0945	*Break*
0945– 1100	***Fluid Properties & PVT (Pressure-Volume-Temperature) Analysis***
1100 – 1200	***History Matching & Calibration***
1200 – 1215	*Break*
1215 – 1300	***Production Forecasting using Dynamic Models***
1300 – 1420	***Sensitivity Analysis in Dynamic Models***
1420– 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

0730 – 0830	***Reserve Estimation Methods***
0830– 0930	***Identifying & Evaluating By-passed Pay Zones***
0930 – 0945	*Break*
0945– 1100	***Strategies for Reducing Development Time & Costs***
1100 – 1200	***Production Enhancement Techniques***
1200 – 1215	*Break*

1215 – 1300	***Rejuvenation of Old Fields through Integrated Approaches***
1300 – 1420	***Case Study:*** *Optimizing Proven Reserves through Team Approaches*
1420– 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 0830	***Integration of Static & Dynamic Models for Field Development Planning***
0830– 0930	***Risk Assessment & Uncertainty Analysis in Reservoir Characterization***
0930 – 0945	*Break*
0945– 1100	***Role of Emerging Technologies (AI, Machine Learning, etc.) in Reservoir Characterization***
1100 – 1200	***Challenges & Solutions in a Multi-Disciplinary Team Approach***
1200 – 1215	*Break*
1215 – 1245	***Best Practices & Lessons Learned in Reservoir Characterization***
1245 – 1315	***Future Trends & Wrap-up***
1315 – 1330	***Course Conclusion***
1330 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*End of Course*

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-

Course Coordinator

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