COURSE OVERVIEW DE1121-3D
Managing Uncertainties in Brown Field Reservoir Simulation

Course Title
Managing Uncertainties in Brown Field Reservoir Simulation



Course Date/Venue
October 19-21, 2026/Executive Boardroom A Meeting Room, Intercontinental Abu Dhabi Hotel, Abu Dhabi, UAE

1.65 CEUs
(16.5 PDHs)
AWARD

Course Reference
DE1121-3D

Course Duration/Credits
Three days/1.65 CEUs/16.5 PDHs

Course Description







This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.

This course focuses on the identification, quantification, management and reduction of uncertainties in Brown field reservoir simulation studies. Participants will learn systematic approaches to integrate geological, petrophysical, production, seismic, surveillance and operational data to improve model reliability and support reservoir management decisions. The course covers uncertainty characterization, history matching, probabilistic forecasting, risk assessment, model calibration and decision-making under uncertainty for mature and producing oil and gas fields.

Further, the course will also discuss the fundamentals of reservoir uncertainty and reservoir simulation workflow for Brown fields; the data availability and data quality assessment, uncertainty identification framework and risk-based reservoir management principles; the structural uncertainty analysis and stratigraphic and facies uncertainty; the petrophysical uncertainty evaluation, geostatistical modeling techniques and static model scenario development; the volumetric uncertainty analysis and dynamic data sources in Brown fields; and the history matching fundamentals, uncertainty in dynamic reservoir properties and assisted history matching techniques.

During this interactive course, participants will learn the model calibration and validation, quantifying remaining uncertainty after history matching and forecasting methodologies for Brown fields; the sensitivity analysis techniques, probabilistic reservoir forecasting, development planning under uncertainty and economic risk assessment; the decision analysis frameworks, reservoir surveillance for uncertainty reduction and closed-loop reservoir management; and the digital technologies, advanced analytics and integrated asset team approach.

Course Objectives/Outcomes & Benefits for the Participants

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

- Apply and gain an in-depth knowledge on managing uncertainties in Brown field reservoir simulation
- Discuss the fundamentals of reservoir uncertainty and reservoir simulation workflow for Brown fields
- Carryout data availability and data quality assessment, uncertainty identification framework and risk-based reservoir management principles
- Employ structural uncertainty analysis and describe stratigraphic and facies uncertainty
- Apply petrophysical uncertainty evaluation, geostatistical modeling techniques and static model scenario development
- Illustrate volumetric uncertainty analysis and identify dynamic data sources in Brown fields
- Discuss history matching fundamentals, uncertainty in dynamic reservoir properties and assisted history matching techniques
- Employ model calibration and validation, quantifying remaining uncertainty after history matching and forecasting methodologies for Brown fields
- Apply sensitivity analysis techniques, probabilistic reservoir forecasting, development planning under uncertainty and economic risk assessment
- Recognize decision analysis frameworks and apply reservoir surveillance for uncertainty reduction and closed-loop reservoir management
- Discuss digital technologies and advanced analytics and integrated asset team approach

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 managing uncertainties in Brown field reservoir simulation for asset managers, field development managers, technical managers, subsurface managers, reservoir managers, team leaders (reservoir, geology, or integrated asset team), senior reservoir engineers, reservoir management specialists, reservoir simulation engineers, reservoir engineers, petroleum engineers, enhanced oil recovery (EOR) engineers, field development engineers, production engineers, reservoir surveillance engineers, planning and development engineers, oil and gas consultants and other technical staff.

Training Methodology

Our courses employ an interactive, learner-centred methodology that integrates theoretical knowledge with practical application. The training is delivered through a suitable combination of some or all of the following methods, selected according to the course content and learning objectives:

- Instructor-led presentations and facilitated discussions
- Practical workshops and participant presentations
- Hands-on exercises and real-world case studies
- Equipment demonstrations and technical drawings
- Hardware- and software-based simulations
- Gamification & Role Play in soft-skills courses only
- Virtual Reality (VR) and Augmented Reality (AR)
- Instructional videos and other relevant training resources

This blended approach encourages active participation, strengthens practical skills and supports the effective application of acquired knowledge in the workplace.

Learning Design & Customization

This course can be customized to the exact requirements of clients. Haward Technology is so proud of our huge capabilities in tailoring our courses to the training needs of our valued clients.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Fee

US$ 5,250 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

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

Haward's certificates are accredited by the following international accreditation organizations:

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). 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.

- 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 **1.65 CEUs** (Continuing Education Units) or **16.5 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:



Mr. Stan Constantino, MSc, BSc, is a **Senior Petroleum & Reservoir Engineer** with over **30 years** of **Offshore & Onshore** extensive experience within the **Oil, Gas & Petroleum** industries**.** His area of expertise include **Reserves & Resources**, **Reserves Estimation & Uncertainty**, **Reservoir** Characterization, **Unconventiona**l **Resource & Reserves** Evaluation, **Oil & Gas Reserves** Estimation, Methods for **Aggregation of Reserves & Resources**, **Fractured Reservoir** Classification & Evaluation, **Sequence Stratigraphy**, **Petrophysics & Rock** Properties, **Seismic** Technology, **Geological** Modelling, **Water Saturation**, **Crude Oil & Natural Gas** Demand, **Exploration Agreements & Financial** Modelling, **Seismic Survey** Evaluation, **Exploration Well** Identification, **Field Production** Operation, **Field Development** Evaluation, Crude Oil Marketing, **Core & Log Data** Integration, **Core Logging**, Advanced **Core & Log Integration**, **Well Logs & Core Analysis**, Advanced Petrophysics/Interpretation of **Cased Hole Logs**, **Cased Hole Formation Evaluation**, **Cased Hole Formation** Evaluation, **Cased Hole Evaluation**, **Cased-Hole Logging**, Applied **Production Logging & Cased Hole & Production Log** Evaluation, **Cased Hole Logging & Formation** Evaluation, Open & Cased Hole Logging, Screening of Oil Reservoirs for **Enhanced Oil Recovery**, **Enhanced Oil Recovery**, **Enhanced Oil Recovery** Techniques, **Petroleum Economic** Analysis, **Oil Industry** Orientation, **Oil Production & Refining**, **Crude Oil Market**, **Global Oil Supply & Demand**, **Global Oil Reserves**, **Crude Oil** Types & Specifications, **Oil Processing**, **Oil Transportation-Methods**, **Oil & Gas** Exploration and Methods, **Oil & Gas** Extraction, Technology Usage in Industrial Security; **Upstream**, **Midstream** & **Downstream Operations**; **Oil Reservoir** Evaluation & Estimation, **Oil Supply & Demand**, **Oil Contracts**, **Government Legislation & Oil Contractual Agreements**, **Oil Projects** & Their Feasibility (revenue and profitability), **Water Flooding**, **Reservoir** Souring & Water Breakthrough, **Reservoir Performance** Using Classical Methods, **Fractured Reservoir** Evaluation & Management, **Reservoir Surveillance** & Management, **Reservoir Engineering** & Simulation, **Reservoir Monitoring**, **Pressure Transient** Testing & **Reservoir** Performance Evaluation, **Reservoir** Characterization, **Reservoir** Engineering Applications with ESP and Heavy Oil, **Reservoir** Volumetrics, Water Drive Reservoir, **Reserve** Evaluation, Rock & Fluid Properties, Fluid Flow Mechanics, PVT Analysis, Material Balance, Darcy's Law & Applications, Radial Flow, **Gas Well** Testing, Natural Water Influx, EOR Methods, Directional Drilling, **Drilling** Production & Operations, Field Development & Production of Oil & Gas, **Wireline Logging**, **Mud Logging**, **Cased Hole Logging**, **Production Logging**, **Slick Line**, **Coil Tubing**, Exploration Wells Evaluation, **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** and **Petrophysical Log Analysis**. Currently, he is the **CEO** & **Managing Director** of **Geo Resources Technology** wherein he is responsible in managing the services and providing technical supports to underground energy related projects concerning **field development**, **production**, **drilling**, **reservoir engineering** and **simulation**.

Throughout his long career life, Mr. Stan has worked for many international companies such as the **Kavala Oil**, **North Aegean Petroleum Company** and **Texaco Inc.**, as the **Managing Director**, **Operations Manager**, **Technical Trainer**, **Training Consultant**, **Petroleum Engineering & Exploration Department Head**, **Assistant Chief Petroleum Engineer**, **Reservoir Engineer, Resident Petroleum Engineer**, **Senior Petroleum Engineer** and **Petroleum Engineer** wherein he has been managing the evaluation of exploration wells, reservoir simulation, development training, production monitoring, wireline logging and well testing including selection and field application of well completion methods.

Mr. Stan has a **Master's** degree in **Petroleum Engineering** and a **Bachelor's** degree in **Geology** from the **New Mexico Institute of Mining & Technology** (**USA**) and from the **Aristotelian University** (**Greece**) respectively. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership of Management (ILM**) and a member of the Society of Petroleum Engineers, USA (**SPE**), Society of Well Log Professional Analysts, USA (**SPWLA**) and European Association of Petroleum Geoscientists & Engineers (**EAGE**). Moreover, Mr. Stan published numerous scientific and technical papers and delivered various trainings, courses and workshops worldwide.

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: ***Monday, 19th of October 2026***

0800 – 0830	*Registration & Coffee*
0830 – 0845	*Welcome & Introduction*
0845 – 0900	***PRE-TEST***
0900 – 0915	***Introduction to Brown Field Reservoir Management*** *Characteristics of Brown Field Reservoirs • Reservoir Maturity Stages • Challenges in Mature Field Development • Role of Reservoir Simulation in Brown Fields*
0915 – 0930	***Fundamentals of Reservoir Uncertainty*** *Definitions and Classifications of Uncertainty • Aleatory Versus Epistemic Uncertainty • Sources of Uncertainty in Reservoir Studies • Impact of Uncertainty on Field Development Decisions*
0930 – 0945	*Break*
0945 – 1000	***Reservoir Simulation Workflow for Brown Fields*** *Static and Dynamic Model Integration • Data-Driven Reservoir Management • Continuous Model Updating Processes • Reservoir Management Objectives*
1000 – 1030	***Data Availability & Data Quality Assessment*** *Historical Data Inventory and Validation • Production Data Quality Control • Well Log and Core Data Verification • Data Consistency Evaluation*
1030 – 1100	***Uncertainty Identification Framework*** *Geological Uncertainty Screening • Petrophysical Uncertainty Assessment • Fluid Property Uncertainty Evaluation • Operational Uncertainty Identification*
1100 – 1200	***Risk-Based Reservoir Management Principles*** *Risk Assessment Methodologies • Probability and Consequence Analysis • Decision Tree Concepts • Risk Mitigation Planning*
1200 – 1215	*Break*
1215 – 1300	***Structural Uncertainty Analysis*** *Fault Interpretation Uncertainty • Structural Closure Uncertainties • Depth Conversion Challenges • Seismic Interpretation Limitations*
1300 – 1330	***Stratigraphic & Facies Uncertainty*** *Facies Distribution Variability • Depositional Environment Interpretation • Reservoir Continuity Assessment • Layer Correlation Uncertainties*
1330 – 1350	***Petrophysical Uncertainty Evaluation*** *Porosity Distribution Uncertainty • Permeability Estimation Challenges • Saturation Calculation Variability • Net Pay Determination Uncertainty*
1350 – 1400	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1400	*Lunch & End of Day One*

Day 2: Tuesday, 20th of October 2026

0800 – 0830	***Geostatistical Modeling Techniques*** *Variogram Analysis Fundamentals • Stochastic Property Modeling • Multiple Realization Generation • Spatial Uncertainty Quantification*
0830 – 0900	***Static Model Scenario Development*** *Low-Side Reservoir Cases • Base-Case Model Generation • High-Side Reservoir Scenarios • Model Ranking Methodologies*
0900 – 0930	***Volumetric Uncertainty Analysis*** *STOIIP and GIIP Uncertainty Estimation • Monte Carlo Volumetric Methods • Probability Distributions Selection • Resource Classification Implications*
0930 – 0945	*Break*
0945 – 1030	***Dynamic Data Sources in Brown Fields*** *Production Performance Data • Pressure Surveillance Data • Water Cut Monitoring • Reservoir Surveillance Programs*
1030 – 1100	***History Matching Fundamentals*** *Objectives of History Matching • Dynamic Model Calibration Principles • Data Matching Priorities • Match Acceptance Criteria*
1100 – 1130	***Uncertainty in Dynamic Reservoir Properties*** *Relative Permeability Uncertainty • Capillary Pressure Variability • Aquifer Strength Uncertainty • Rock Compressibility Uncertainty*
1130 – 1200	***Assisted History Matching Techniques*** *Automated Optimization Methods • Proxy Model Applications • Genetic Algorithms • Ensemble-Based Approaches*
1200 – 1215	*Break*
1215 – 1230	***Model Calibration & Validation*** *Cross-Validation Techniques • Blind Prediction Testing • Dynamic Consistency Checks • Model Robustness Assessment*
1230 – 1300	***Quantifying Remaining Uncertainty After History Matching*** *Non-Uniqueness of Solutions • Posterior Uncertainty Assessment • Model Ranking and Selection • Confidence Interval Estimation*
1300 – 1350	***Forecasting Methodologies for Brown Fields*** *Production Forecasting Principles • Scenario-Based Forecasting • Recovery Prediction Methods • Forecast Performance Indicators*
1350 – 1400	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1400	*Lunch & End of Day Two*

Day 3: Wednesday, 21st of October 2026

0800 – 0830	***Sensitivity Analysis Techniques*** *One-at-a-Time Sensitivity Studies • Tornado Chart Analysis • Parameter Ranking Methods • Critical Uncertainty Identification*
0830 – 0900	***Probabilistic Reservoir Forecasting*** *P10, P50, and P90 Forecasting • Probabilistic Production Profiles • Reserve Uncertainty Estimation • Confidence Interval Generation*
0900 – 0930	***Development Planning Under Uncertainty*** *Infill Drilling Evaluation • Workover Candidate Selection • Waterflood Optimization Scenarios • Enhanced Recovery Planning*

0930 – 0945	*Break*
0945 – 1030	***Economic Risk Assessment*** *Economic Uncertainty Drivers • Cash Flow Modeling • Net Present Value (NPV) Distributions • Investment Risk Evaluation*
1030 – 1100	***Decision Analysis Frameworks*** *Decision Trees for Reservoir Management • Expected Monetary Value Calculations • Value of Information Analysis • Portfolio Management Concepts*
1100 - 1130	***Reservoir Surveillance for Uncertainty Reduction*** *Pressure Monitoring Programs • Production Logging Applications • Time-Lapse Seismic Integration • Reservoir Performance Tracking*
1130 - 1200	***Closed-Loop Reservoir Management*** *Continuous Model Updating • Data Assimilation Workflows • Surveillance-Driven Optimization • Adaptive Reservoir Management*
1200 – 1215	*Break*
1215 – 1230	***Digital Technologies & Advanced Analytics*** *Machine Learning Applications • Artificial Intelligence in Uncertainty Analysis • Digital Twin Concepts • Predictive Analytics Workflows*
1230 – 1245	***Integrated Asset Team Approach*** *Multi-Disciplinary Collaboration • Uncertainty Communication Strategies • Decision Support Systems • Stakeholder Engagement Processes*
1245 - 1300	***Best Practices for Brown Field Simulation Studies*** *Model Governance Procedures • Documentation Standards • Quality Assurance Protocols • Industry Benchmarking Methods*
1300 - 1315	***Industry Case Studies & Practical Workshops*** *Mature Oil Field Uncertainty Management Case Study • Waterflood Reservoir Simulation Uncertainty Analysis • Brown Field Redevelopment Planning Exercise • Lessons Learned and Industry Best Practices*
1315 – 1330	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1330 – 1345	***POST-TEST***
1345 – 1400	*Presentation of Course Certificates*
1400	*Lunch & End of Course*

Course Learning Outcomes

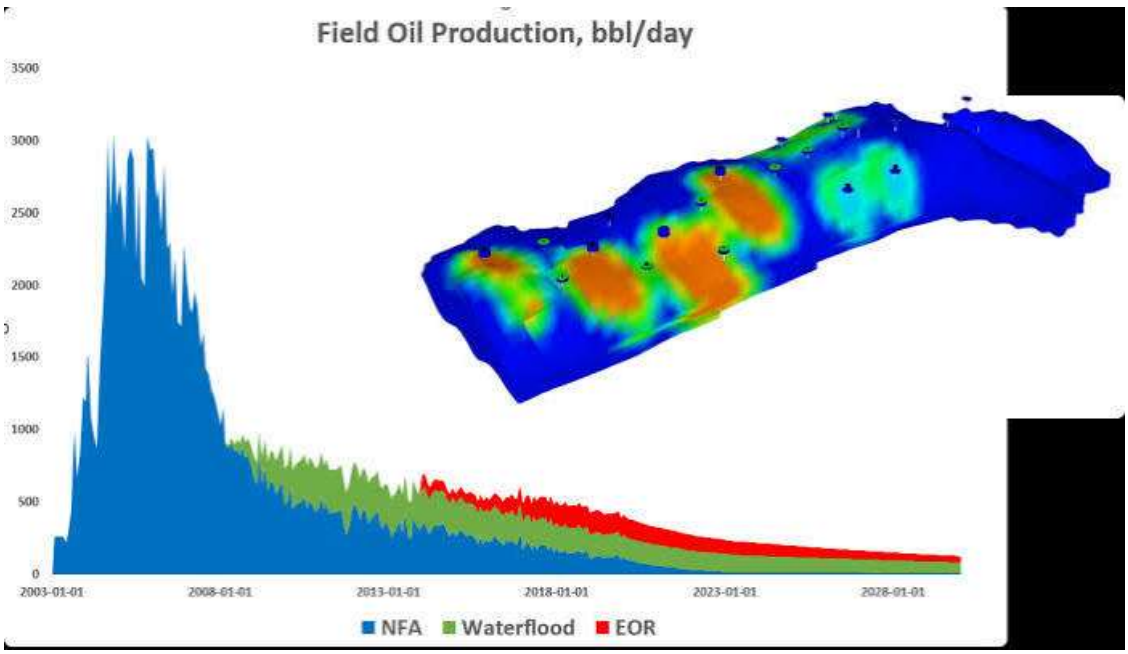
Upon completion of this course, participants will be able to:

- Identify and classify uncertainties affecting brown field reservoir simulation studies
- Evaluate geological, petrophysical, fluid, and dynamic uncertainties systematically
- Develop multiple static and dynamic reservoir model realizations
- Apply geostatistical and probabilistic methods to quantify uncertainty
- Perform history matching while assessing solution non-uniqueness
- Conduct sensitivity analyses and probabilistic production forecasting
- Integrate surveillance data to reduce reservoir uncertainties
- Evaluate development opportunities under uncertainty using risk-based approaches

- Apply economic decision analysis techniques to reservoir management
- Implement closed-loop reservoir management practices for mature fields
- Communicate uncertainty effectively to management and multidisciplinary teams
- Apply industry best practices for uncertainty management in brown field reservoir simulation projects

Simulator (Hands-on Practical Sessions)

Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using the "CMG Suite 2015".



CMG Suite 2015

Course Coordinator

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