



COURSE OVERVIEW DE0052 ECLIPSE Black Oil Reservoir Simulation

Course Title

ECLIPSE Black Oil Reservoir Simulation

Course Date/Venue

Session 1: October 27-31, 2024/Boardroom,
Warwick Hotel Doha, Doha, Qatar

Session 2: December 08-12, 2024/Boardroom,
Warwick Hotel Doha, Doha, Qatar

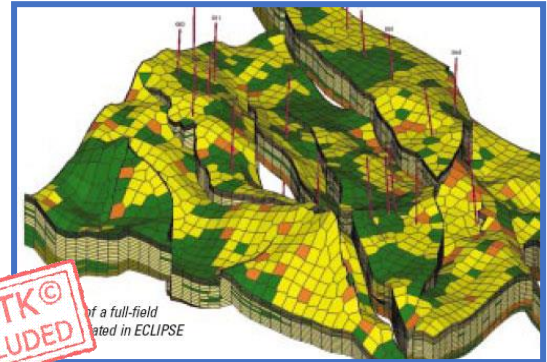
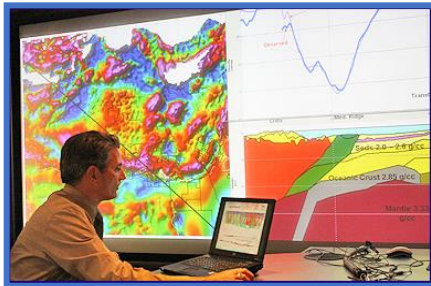
Course Reference

DE0052

Course Duration/Credits

Five days/3.0 CEUs/30 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 is designed to provide participants with a detailed and up-to-date overview of ECLIPSE Black Oil Reservoir Simulation. It covers the reservoir flow dynamics and fluid behavior; the different types of reservoir simulation including black oil and compositional simulation; the features and capabilities of ECLIPSE simulator; the ECLIPSE simulator user interface and workflows; and the techniques for generating grids and defining rock properties in the ECLIPSE simulator.

During this interactive course, participants will learn the impact of grid generation and rock property modeling; the fluid property modeling and its techniques for defining fluid properties; the impact of well modeling on reservoir simulation results; the techniques for executing and analyzing simulation runs in the ECLIPSE simulator; the advanced reservoir simulation techniques; the techniques for simulating complex reservoirs; and the impact of advanced reservoir simulation techniques on reservoir management and production optimization.

Course Objectives

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

- Apply and gain an in-depth knowledge on ECLIPSE black oil reservoir simulation
- Discuss reservoir simulation and its role in exploration and production as well as the basic concepts in reservoir simulation, reservoir flow dynamics and fluid behavior
- Identify the different types of reservoir simulation including black oil and compositional simulation
- Explain the features and capabilities of ECLIPSE simulator including grid generation, fluid and rock property modeling and well modeling
- Describe ECLIPSE simulator user interface and workflows
- Carryout techniques for generating grids and defining rock properties in the ECLIPSE simulator including permeability modeling, porosity modeling and saturation modeling
- Recognize the impact of grid generation and rock property modeling on reservoir simulation results
- Illustrate fluid property modeling and its techniques for defining fluid properties in the ECLIPSE simulator including PVT analysis, oil-water-gas relative permeability and scaling
- Discuss the impact of fluid property modeling on reservoir simulation results
- Illustrate well modeling and the techniques for defining well operations and performance in the ECLIPSE simulator including well placement, well control and well production and injection rates
- Describe the impact of well modeling on reservoir simulation results
- Apply simulation runs and results analysis and the techniques for executing and analyzing simulation runs in the ECLIPSE simulator including well performance, pressure analysis and saturation analysis
- Discuss the impact of simulator runs and result analysis on reservoir management and production optimization
- Employ advanced reservoir simulation techniques and the techniques for simulating complex reservoirs including thermal and enhanced oil recovery (EOR) simulation, compositional simulation and unconventional reservoir simulation
- Explain the impact of advanced reservoir simulation techniques on reservoir management and production optimization

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-simulation by ECLIPSE software for experienced reservoir engineers. Participants should have a basic knowledge of reservoir simulation.

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 **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.

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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. George Basta, MSc, BSc, is a **Senior Reservoir Engineer** with extensive experience within the **Oil & Gas, Refinery** and **Petrochemical** industries. His wide expertise covers in the areas of **Reserve Calculation, Reservoir Engineering, Petroleum Engineering & Reservoir Management, Sandstone & Fractured Carbonate Reservoir, Reservoir Productivity, Enhanced Oil Recovery (EOR), Thermal Enhanced Oil Recovery (TEOR), Reservoir Pressure Maintenance (Water Flooding), Reservoir Modelling, Reservoir Surveillance, Steam Flood Reservoir**

Management, Integrated Carbonate Reservoir Characterization, Applied Reservoir Engineering & Management, Reservoir Surveillance & Management, Applied Production Logging & Reservoir Monitoring, Reservoir Management, Reservoir Geomechanics, Reservoir Engineering, Reservoir Characterization, Reservoir Characterization, Reservoir Fluid Characterization & Management, Fractured Carbonate Reservoir, Reservoir Geophysics, SCAL, Rocks & Fluids Properties, Production & Injection, Heavy Oil Recovery, Well Production Engineering, Well Modelling, Nodal Analysis, Well Data Results Interpretation, Well Tests, Enhancing Well Productivity, Injection Logging, Original Hydrocarbon in Place (OHIP), Reserve Estimation, Reserve Evaluation, Steam Injection, Polymer Injection, Steam Pulsing Injection (SPI), Cyclic Group Steaming of Wells (CGSW), Quality Management System, Volumetric Analysis, Monte Carlo Techniques, Material Balance and Decline Curve Analysis (DCA). He is also well-versed in **PVTi, PVTP, PVTsim, PETREL Software, MBAL Software, Prosper Software, CMG, OFM, Saphir/Ecrin, Advanced Excel, EORgui, IMEX, Thermal STARS, EXOTHERM, Eclipse, KAPPA Software and PETEX.**

During Mr. George's career life, he has gained his thorough and practical experience through his various positions as the **Reservoir Surveillance Engineer, QA/QC Engineer, Field Engineer, Reservoir Surveillance Petroleum Consultant Engineer** and **Senior Instructor/Lecturer** for various companies like OPEC (Offshore Protection Engineering Company), Scimitar Production Egypt Ltd and the Business Development in Africa and MENA Regions.

Mr. George has a **Master's and Bachelor's** degree in **Petroleum Engineering**. Further, he is a **Certified Instructor/Trainer**, an active member of the Society of Petroleum Engineer (**SPE**) and Canadian Society of Petroleum Geologists (**CSPG**). Moreover, he published various books and scientific journals and has delivered numerous trainings, courses, seminars, conferences and workshops globally.



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\$ 8,500 per Delegate. 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:

0730 - 0800	Registration & Coffee
0800 - 0815	Welcome & Introduction
0815 - 0830	PRE-TEST
0830 - 0930	Introduction to Reservoir Simulation
0930 - 1045	Reservoir Simulation & its Role in Exploration & Production
1045 - 1100	Break
1100 - 1200	Basic Concepts in Reservoir Simulation, including Reservoir Flow Dynamics & Fluid Behavior
1200 - 1300	Different Types of Reservoir Simulation, including Black Oil & Compositional Simulation
1300 - 1315	Break
1315 - 1420	ECLIPSE Simulator Overview
1420 - 1430	Recap
1430	Lunch & End of Day One

Day 2:

0730 - 0845	Features & Capabilities of the ECLIPSE Simulator, including Grid Generation, Fluid & Rock Property Modeling & Well Modeling
0845 - 1000	ECLIPSE Simulator User Interface & Workflows
1000 - 1015	Break
1015 - 1130	Grid Generation & Rock Property Modeling
1130 - 1245	Techniques for Generating Grids & Defining Rock Properties in the ECLIPSE Simulator, including Permeability Modeling, Porosity Modeling & Saturation Modeling





1245 - 1300	Break
1300 - 1420	The Impact of Grid Generation & Rock Property Modeling on Reservoir Simulation Results
1420 - 1430	Recap
1430	Lunch & End of Day Two

Day 3:

0730 - 0845	Fluid Property Modeling
0845 - 1000	Techniques for Defining Fluid Properties in the ECLIPSE Simulator, including PVT Analysis, Oil-Water-Gas Relative Permeability & Scaling
1000 - 1015	Break
1015 - 1130	The Impact of Fluid Property Modeling on Reservoir Simulation Results
1130 - 1245	Well Modeling
1245 - 1300	Break
1300 - 1420	Techniques for Defining Well Operations & Performance in the ECLIPSE Simulator, including Well Placement, Well Control & Well Production & Injection Rates
1420 - 1430	Recap
1430	Lunch & End of Day Three

Day 4:

0730 - 0845	The Impact of Well Modeling on Reservoir Simulation Results
0845 - 1000	Simulation Runs & Results Analysis
1000 - 1015	Break
1015 - 1130	Techniques for Executing & Analyzing Simulation Runs in The ECLIPSE Simulator, including Well Performance, Pressure Analysis & Saturation Analysis
1130 - 1245	The Impact of Simulation Runs & Results Analysis on Reservoir Management & Production Optimization
1245 - 1300	Break
1300 - 1420	Advanced Reservoir Simulation Techniques
1420 - 1430	Recap
1430	Lunch & End of Day Four

Day 5:

0730 - 0900	Techniques for Simulating Complex Reservoirs, including Thermal & Enhanced Oil Recovery (EOR) Simulation, Compositional Simulation & Unconventional Reservoir Simulation
0900 - 0915	Break
0915 - 1030	The Impact of Advanced Reservoir Simulation Techniques on Reservoir Management & Production Optimization
1030 - 1200	Group Project & Presentations Group Project on Reservoir Simulation using the ECLIPSE Simulator • Presentation & Discussion of Group Project Results • Best Practices & Tips for Successful Reservoir Simulation, including Grid Generation, Fluid & Rock Property Modeling & Well Modeling

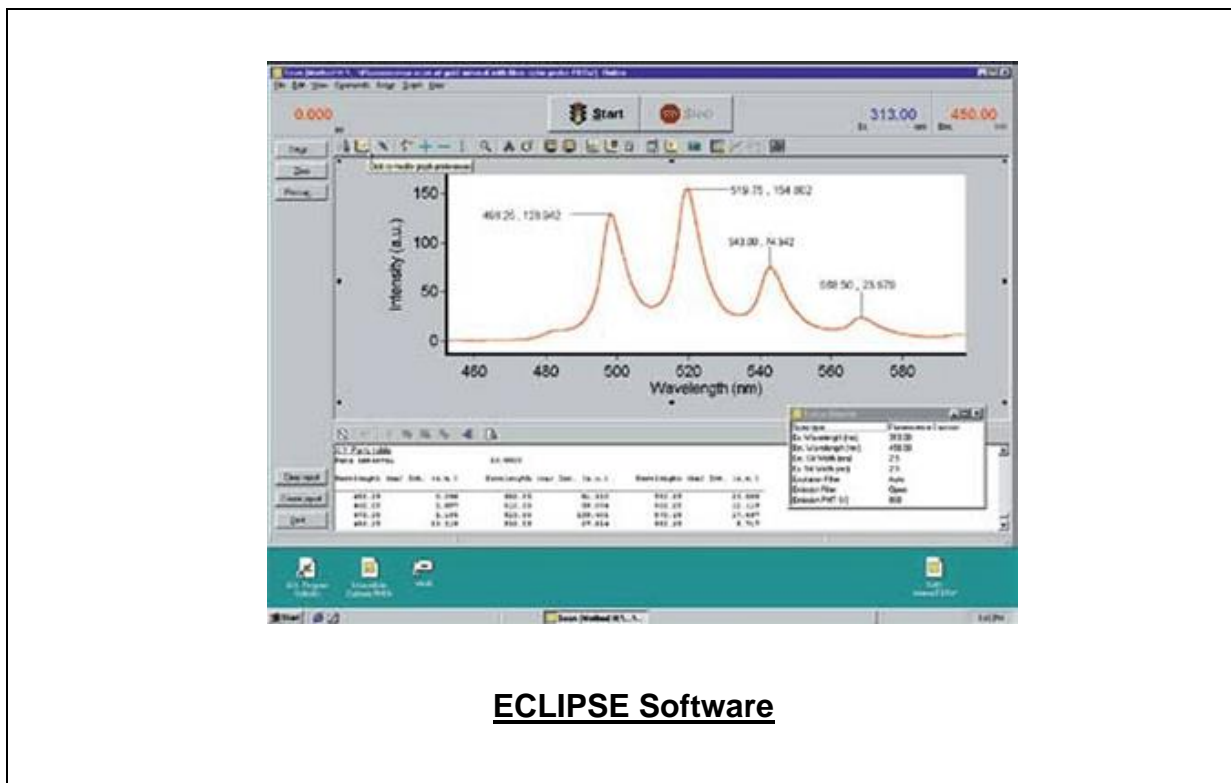




1200 - 1215	Break
1215 - 1345	Conclusion & Future Directions <i>Future Directions in Reservoir Simulation • Discussion of Emerging Technologies & Methodologies, including Cloud Computing, High-Performance Computing & Workflows for Data-Driven Reservoir Simulation</i>
1345 - 1400	Course Conclusion
1400 - 1415	POST-TEST
1415 - 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch & End of Course</i>

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 “ECLIPSE Software”.



ECLIPSE Software

Course Coordinator

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