



## COURSE OVERVIEW DE0052 ECLIPSE Black Oil Reservoir Simulation

### Course Title

ECLIPSE Black Oil Reservoir Simulation

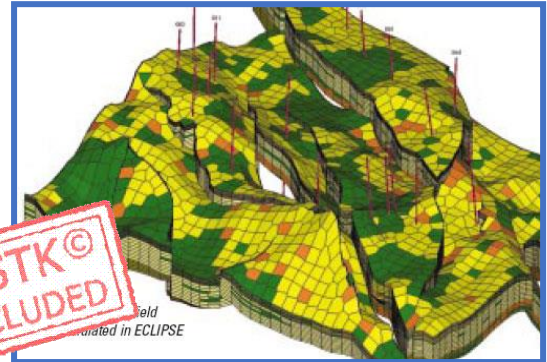
### Course Reference

DE0052

### Course Duration/Credits

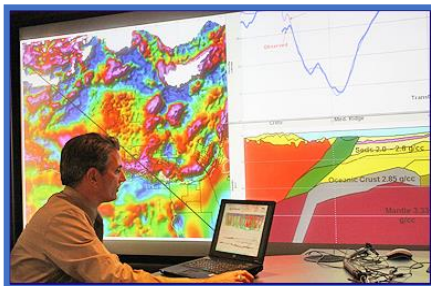
Five days/3.0 CEUs/30 PDHs

### Course Date/Venue



Session(s)	Date	Venue
1	April 21-25, 2024	Oryx Meeting Room, DoubleTree By Hilton Doha-Al Sadd, Doha, Qatar
2	September 01-05, 2024	
3	October 27-31, 2024	
4	December 08-12, 2024	

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

**Day 2:**

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



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

**Day 3:**

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

**Day 4:**

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

**Day 5:**

0730 - 0900	<b>Techniques for Simulating Complex Reservoirs, including Thermal &amp; Enhanced Oil Recovery (EOR) Simulation, Compositional Simulation &amp; Unconventional Reservoir Simulation</b>
0900 - 0915	Break
0915 - 1030	<b>The Impact of Advanced Reservoir Simulation Techniques on Reservoir Management &amp; Production Optimization</b>
1030 - 1200	<b>Group Project &amp; Presentations</b> 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

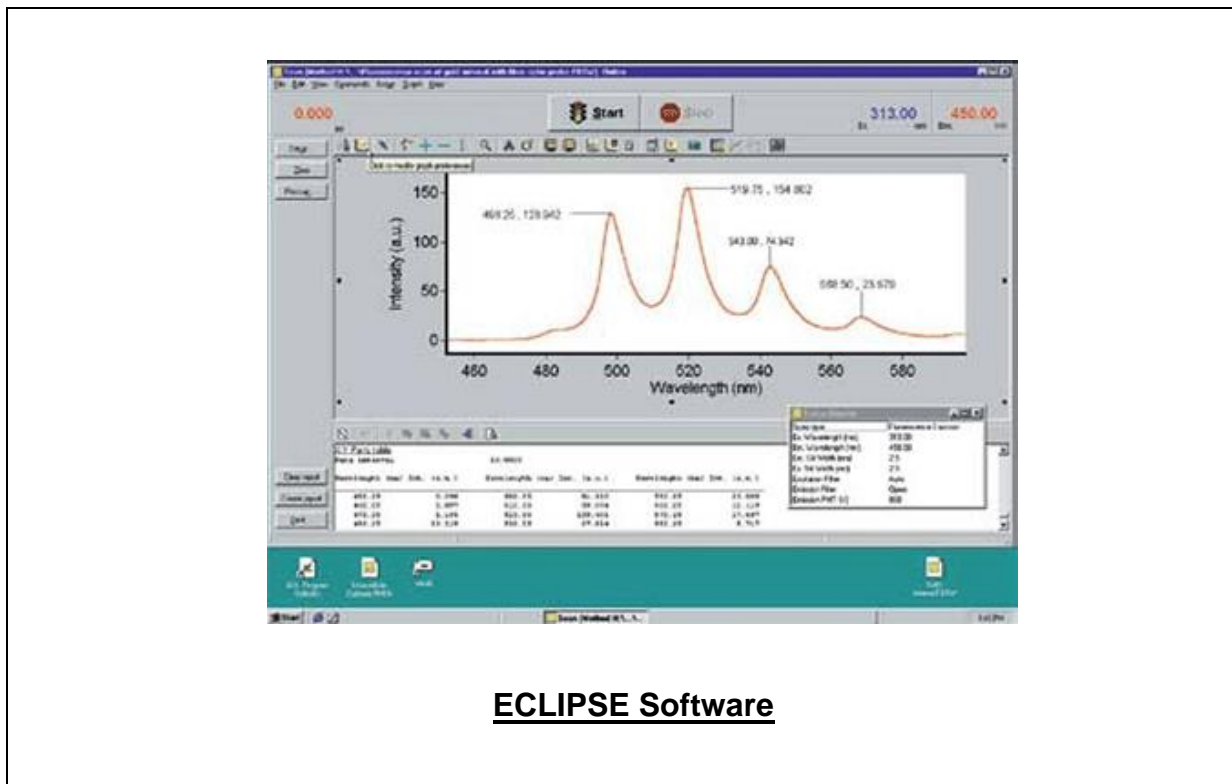




1200 - 1215	Break
1215 - 1345	<b>Conclusion &amp; Future Directions</b> <i>Future Directions in Reservoir Simulation • Discussion of Emerging Technologies &amp; Methodologies, including Cloud Computing, High-Performance Computing &amp; Workflows for Data-Driven Reservoir Simulation</i>
1345 - 1400	<b>Course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

**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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