

COURSE OVERVIEW DE0378
Subsurface Synthesis & Geomodelling Rules

Course Title

Subsurface Synthesis & Geomodelling Rules

Course Date/Venue

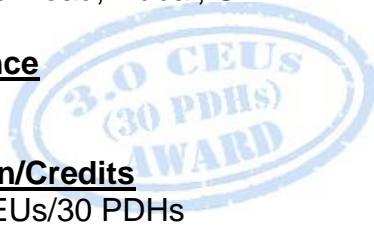
Session 1: May 12-16, 2025/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Session 2: November 02-06, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE



Course Reference

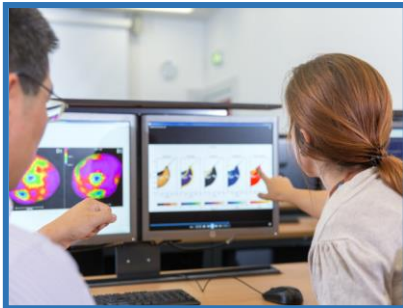
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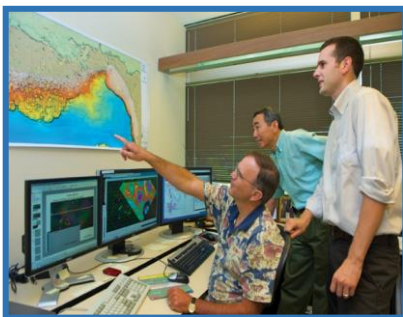
Course Duration/Credits

Five days/3.0 CEUs/30 PDHs

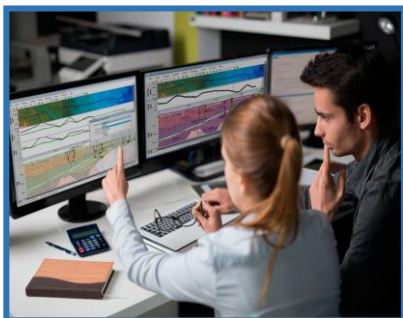
Course Description



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 up-to-date overview of Modelling & Managing Uncertainty in the Subsurface. It covers the types of uncertainty in subsurface modelling comprising of statistical, spatial and model uncertainty; the principles of geostatistics including data acquisition and quality; the difference between deterministic and probabilistic modelling; the advanced geostatistical methods of stochastic modelling; the uncertainty of petrophysical properties; and the statistical sampling and distribution models and seismic data in stochastic models.



During this interactive course, participants will learn the reservoir heterogeneity and uncertainty; the structural modelling, fluid distribution and flow uncertainty; the scenario analysis and sensitivity studies, well test data and machine learning in subsurface modelling; the Monte Carlo simulation and risk analysis; the condition models to dynamic data, history matching and model updating; the proper tools and methods for effective communication; the decision analysis under uncertainty; and the risk management strategies, economic aspects of uncertainty, emerging trends and future directions.

Course Objectives

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

- Apply and gain an in-depth knowledge on modelling and managing uncertainty in the subsurface
- Identify the types of uncertainty in subsurface modelling covering statistical, spatial and model uncertainty
- Discuss the principles of geostatistics including data acquisition and quality
- Identify the difference between deterministic and probabilistic modelling
- Carryout advanced geostatistical methods of stochastic modelling and discuss the uncertainty of petrophysical properties
- Illustrate statistical sampling and distribution models and integrate seismic data in stochastic models
- Identify reservoir heterogeneity and uncertainty and illustrate structural modelling, fluid distribution and flow uncertainty
- Carryout scenario analysis and sensitivity studies, integrate well test data and describe machine learning in subsurface modelling
- Apply Monte Carlo simulation and risk analysis, conditioning models to dynamic data, history matching and model updating
- Use proper tools and methods for effective communication and apply decision analysis under uncertainty
- Employ risk management strategies and discuss economic aspects of uncertainty, emerging trends and future directions

Exclusive Smart Training Kit - H-STK®



Participants of this course will receive the exclusive “Howard 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 for modelling and managing uncertainty in the subsurface for geoscientists, petroleum and reservoir engineers, data scientists and project managers needing a practical understanding for modelling and managing uncertainty in the subsurface.

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 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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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.

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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.

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:



Mr. Brendon Billings, MSc, BSc, is a Senior Petroleum Engineer and Well Service Consultant with over 30 years of international experience in Drilling/Reservoir/Petroleum Engineering and Well Service Operations. He is a recognized authority in “Hands On” Service and Drilling Operations, Well Completions (Riggless Operations), Product Optimization, Wellhead Operations, Wellbore Interventions, High Volume Lift Project Management, Reservoir Optimization, Well Testing, Wire/Slickline Equipment and Operations, Coil Tubing, Water Flooding, Electric Submersible Pumps (ESPs), Gas Lifts & Steam Assist Gravity Drain (SAGD) Applications, Facility Inspection, Root Cause Failure Management and Power Factor Management. Currently, he is the President of a large specialized engineering services provider to the North-American Sedimentary Basin Production and other international clients. Moreover, he occupies a consultant position and remains to offer his expertise in many areas of the drilling discipline and is well recognized & respected for his process, procedural expertise, modus operandi as well as ongoing participation, interest and experience in continuing to promote technology to producers around the world.

Throughout his long career life, Mr. Billings has worked for many international companies and has spent several years **managing technically complex wellbore interventions** in both **drilling & servicing**. He is a **well regarded** for his **process, procedural expertise** and **modus operandi**. Further, he was the **Projects Manager** at **Sherrit Petreola** where he was fully responsible for all **Reservoir Development** activities. He has spent **more than 2000 days** total on **Rig Floors** for **Drilling (onshore/offshore)** and **Well Servicing Operations** jobs. Mr. Billings was the **Senior Applications Expert** for **Schlumberger Canada (REDA Services)** where he was greatly involved in high volume lift and reservoir optimization projects including specialty endeavours like **SAGD and Gas Lift**. He lead special projects for alternative technology applications and was referred to as the **‘technical specialist’** for severe services on ESP applications and had provided in-house & client instruction for ESP application schooling. Previously, he was the **Artificial Lift Services Developer** for **Weatherford**, a leading provider of oilfield services equipment for drilling, evaluation, completion, production and intervention areas. Herein, he was tasked to introduce new ESP technology and lead a project team for ESP facility development & design. Much earlier in his career, he has held positions such as **Operations Supervisor, Rig Consultant, Project Manager, Regional Manager, Engineering Representative, International Engineering Support Technician, Facility Services Manager and Power Plant Engineer.**

Mr. Billings has **Master** and **Bachelor** degrees in **Petroleum Engineering** and **Power Engineering**. He is a **licensed Professional Engineer**, a **Certified Instructor/Trainer** and a well respected member of the **Society of Petroleum Engineers (SPE)**. Further, he has conducted **numerous industry short courses** and **SPE workshops**.

Course Fee

US\$ 8,000 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.



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 & Coffee</i>
0800 - 0815	<i>Welcome & Introductions</i>
0815 – 0830	PRE-TEST
0830 – 0900	Introduction to Subsurface Modelling: Overview & Significance
0900 - 0930	Types of Uncertainty in Subsurface Modelling: Statistical, Spatial, & Model Uncertainties
0930 – 0945	<i>Break</i>
0945 – 1100	Principles of Geostatistics: Basics & Applications in Uncertainty Modelling
1100 – 1230	Data Acquisition & Quality: Impact on Uncertainty
1230 – 1245	<i>Break</i>
1245 – 1330	Deterministic versus Probabilistic Modelling: Differences & Applications
1330 - 1420	Case Studies: Real-World Examples of Uncertainty in Subsurface Models
1420 – 1430	Recap
1430	<i>Lunch & End of Day One</i>

Day 2

0730 – 0830	Advanced Geostatistical Methods: Kriging, Co-Kriging, & Simulation
0830 - 0930	Stochastic Modelling: Principles & Techniques
0930 – 0945	<i>Break</i>
0945 – 1100	Uncertainty in Petrophysical Properties: Porosity, Permeability, & Saturation
1100 – 1230	Statistical Sampling & Distribution Models: Techniques for Handling Subsurface Data
1230 – 1245	<i>Break</i>
1245 – 1330	Integrating Seismic Data in Stochastic Models: Methods & Challenges
1330 - 1420	Practical Exercise: Hands-On Session on Stochastic Modelling
1420 – 1430	Recap
1430	<i>Lunch & End of Day Two</i>

Day 3

0730 – 0830	Reservoir Heterogeneity & Uncertainty: Identifying & Modelling Heterogeneities
0830 - 0930	Structural Modelling & Uncertainty: Faults, Fractures, & Their Impact
0930 – 0945	<i>Break</i>
0945 – 1100	Fluid Distribution & Flow Uncertainty: Impact on Reservoir Performance
1100 – 1230	Scenario Analysis & Sensitivity Studies: Exploring Different Subsurface Scenarios
1230 – 1245	<i>Break</i>
1245 – 1330	Integrating Well Test Data: Impact on uncertainty reduction
1330 - 1420	Workshop: Creating Reservoir Models with Varying Uncertainty Parameters
1420 – 1430	Recap
1430	<i>Lunch & End of Day Three</i>



Day 4

0730 – 0830	Machine Learning in Subsurface Modelling: Applications & Potential
0830 - 0930	Monte Carlo Simulation & Risk Analysis: Techniques & Case Studies
0930 – 0945	Break
0945 – 1100	Conditioning Models to Dynamic Data: Real-Time Data Integration
1100 – 1230	History Matching & Model Updating: Balancing Models with Production Data
1230 – 1245	Break
1245 – 1330	Visualizing Uncertainty: Tools & Methods for Effective Communication
1330 - 1420	Group Project: Collaborative Uncertainty Modelling Exercise
1420 – 1430	Recap
1430	Lunch & End of Day Four

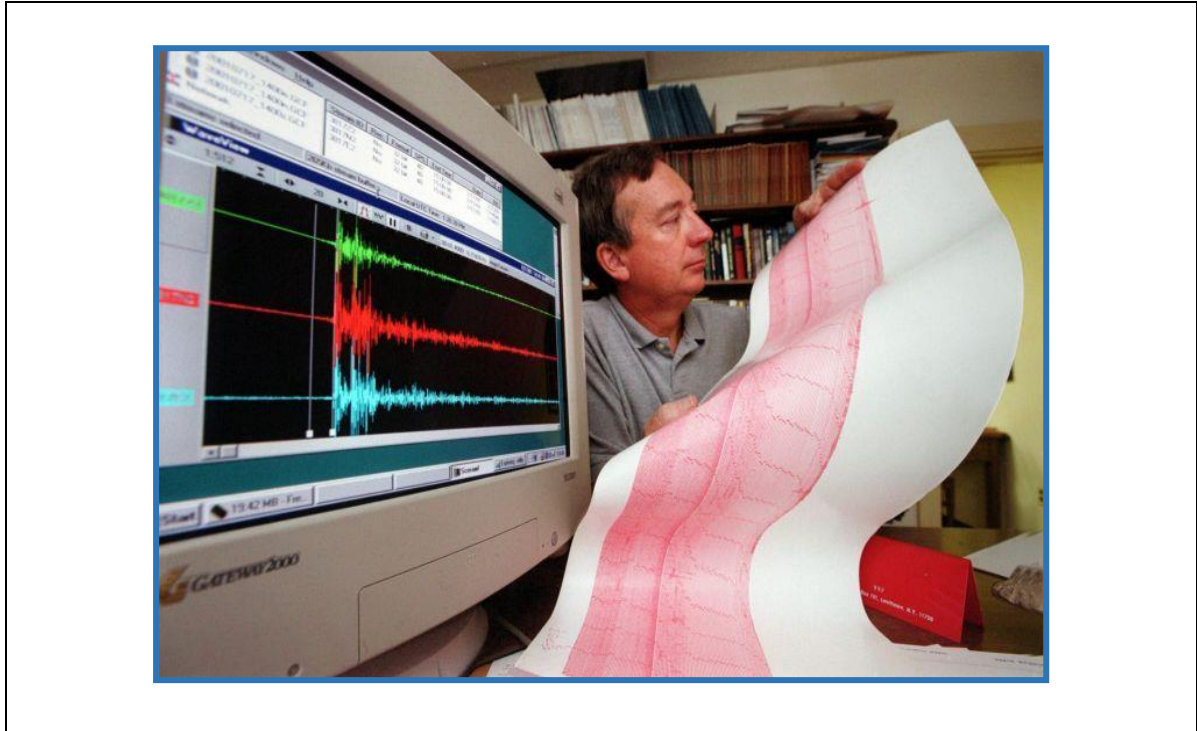
Day 5

0730 – 0830	Decision Analysis Under Uncertainty: Frameworks & Approaches
0830 - 0930	Risk Management Strategies: Identifying, Assessing, & Mitigating Risks
0930 – 0945	Break
0945 – 1100	Economic Aspects of Uncertainty: Impact on Project Valuation & Investment Decisions
1100 – 1230	Case Studies in Uncertainty Management: Lessons from Industry
1230 – 1245	Break
1245 – 1345	Emerging Trends & Future Directions: Innovations in Uncertainty Modelling.
1345 - 1400	Course Conclusion
1400 - 1415	POST-TEST
1415 – 1430	Presentation of Course Certificates
1430	Lunch & End of Course



Practical Sessions

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



Course Coordinator

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org