

**COURSE OVERVIEW DE0351-4D**  
**Reserves Estimation and Uncertainty**

**Course Title**

Reserves Estimation and Uncertainty

**Course Date/Venue**

December 23-26, 2024/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

**Course Reference**

DE0351-4D

**Course Duration/Credits**

Four days/2.4 CEUs/24 PDHs



**Course Description**



***This is 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 reserve estimation and uncertainty. It includes presentation of various reserve estimating methodologies and the difference between resources and reserves. The classifications and definitions of these reserves and resources, along with a guideline for the application of these definitions will be covered. PRMS, SPE, WPC, AAPG, SEC, and other regulatory authority guidelines will be discussed.



The course will update G&G reservoir engineers with the newest and most accurate methods for obtaining the value of a reserve. Following the completion of this course, all participants should be able to manage deterministic and probabilistic methods, with the aim of gaining a thorough understanding of various reserve levels and their equivalence in both systems.

Further, the course will also discuss the prospective, contingent resources and reserves under the SPE-PRMS; the oil and gas reserves; the deterministic, certainty, ignorance and risk; the probabilistic reserves including subjectivity and expert opinion; and the basics of reservoir characterization including the principles of reservoir characterization and reserves evaluation.

During this interactive course, participants will learn the reserves, reserves estimation, production profiles, risks and uncertainties risks; the methods of exploration resource estimation and risking; the main concepts of risks and uncertainties management; integrating risks and uncertainties into reserves evaluation; the methods for “green-field” developments including analogues, geological modeling and reservoir simulation; the estimation of reserves for “brown fields”, classical analysis, surface analysis and stochastic simulation; the drilling, production, operation risk, production forecasting and long-term gas controls; the LNG & DomGAS, industrial contracts, oil field development, economic evaluation and risking; the conventional and unconventional gas, onshore oil and unconventional oil, offshore production and economic risk; and the portfolio analysis, look-back analysis and reserves performance indicators.

### **Course Objectives**

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

- Apply and gain a comprehensive knowledge on reserves estimation and uncertainty
- Review the principles of reservoir characterization and reserved evaluation
- Learn about main concepts of risks and uncertainties management
- Learn about integrating risks and uncertainties into reserves evaluation – static uncertainties, dynamic uncertainties, geostochastic modeling, etc
- Discuss prospective, contingent resources and reserves under the SPE-PRMS
- Discuss oil and gas reserves, define deterministic and differentiate certainty, ignorance and risk
- Discuss probabilistic reserves including subjectivity and the expert opinion
- Review the basics of reservoir characterization including the principles of reservoir characterization and reserves evaluation
- Define reserves and discuss reserves estimations, production profiles, risks and uncertainties risks
- Carryout various methods of exploration resource estimation and risking
- Explain the main concepts of risks and uncertainties management as well as the integrating risks and uncertainties into reserves evaluation
- Illustrate the methods for “green-field” developments including analogues, geological modeling and reservoir simulation
- Apply estimation of reserves for “brown fields”, classical analysis, surface analysis and stochastic simulation
- Recognize drilling, production and operation risk as well as carryout production forecasting and long-term gas controls
- Identify LNG and DomGas, industrial contracts, oil field development, economic evaluation and risking
- Recognize conventional and unconventional gas, onshore oil and unconventional oil, offshore production and economic risk

- Illustrate portfolio analysis, look-back analysis and reserves performance indicators

### **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, sample video clips of the instructor’s actual lectures & practical sessions during the course conveniently saved in a **Tablet PC**.

### **Who Should Attend**

This course provides an overview of all significant aspects and considerations of oil and gas reserve estimation and uncertainty calculation for geologists, geoscientists, engineers, business analysts, investment bankers, oil and gas company asset managers, oil and gas economists, government regulatory officers, financial analysts, private equity and venture capitalists as well as acquisition, divestment and new business professionals.

### **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\$ 6,750** per Delegate + **VAT**. 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 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 **2.4 CEUs** (Continuing Education Units) or **24 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:



**Dr. Saad Aljzwe, PhD, MEng, MSc, BSc, is a Senior Petroleum & Reservoir Engineer with over 25 years of practical and academic experience in the areas of Petroleum Economic Analysis, Economic Evaluation, Petroleum Risk Analysis & Decision Making, Oil Agreement, Reserves Estimation & Uncertainty, Oil in Place Estimation & Range of Uncertainty, Exploration & Production Sharing Agreements, Multidisciplinary Research, Economics & Property Evaluation, Conventional & Unconventional Oil & Gas Reserves**

**Estimation, Reservoir Management, Reservoir Engineering, Reservoir Performance Analysis, Oil Fields Subsurface Assessment & Forecasting, Casing Design, Drilling & Workover, PVT & Core Analysis, Production Operations, EOR/IOR, Field Development Design & Evaluation, Miscible Gas Injection (CO<sub>2</sub> Injection) Design & Evaluation, Special Core Analysis & Formation Evaluation, EOR-CO<sub>2</sub> Injection, Remaining Gas in Place Estimation, Material Balance Method, Computerized Monitoring & Processing System Design, Magnetic Field Controlling, Comparative Risk Evaluation & Sensitivity Analysis, Critical Production Rate for Bottom Water Coning in the Majed (EE-Pool) Reservoir, Oil Pipeline Black Powder Removal, Oil Field Water Shutoff Treatment Methods, Water-Based Mud Rheological & Fluid Loss Control, Empirical Equation, Water-Flooding Performance, Sandstone Reservoirs, Reservoir Fluid Properties, Mathematical Modelling, Directional Permeability Anisotropy, Drilling Operational Efficiency & Well Cost Reduction, Infill Drilling Program, Drilling Efficiency and Ultra-mud System Optimization. Further, he is also well-versed in various petroleum software such as the MBAL (Reservoir Engineering Toolkit), KAPPA-Saphir (Well Testing), KAPPA-Rubis (Reservoir Simulation), CMG (Reservoir Simulation), Merak Peep (Economic Evaluation and Production Decline Analysis) and Monte Carlo Simulation.**

During Dr. Saad's career, he gained his thorough practical experience through several challenging positions such as the **Senior Lecturer, Head of Petroleum Engineering Department, Head of Chemical Engineering Department, Head of the Union of Faculty Members, Assistant Professor, Teaching Assistant, Researcher and Academic Coordinator** from various international well-renowned companies such as the **University of Wyoming, Colorado School of Mines, American University of Ras Al Khaimah, Australian College of Kuwait, Sirt University and Bright Star University of Technology.**

Dr. Saad has a **PhD and Master** degrees in **Petroleum Engineering** from the **University of Wyoming and Colorado School of Mines, USA**, respectively as well as **Master** degrees in **Petroleum Economics & Management and Reservoir Geosciences & Engineering** from the **Institut Francias du Petrole, France** and a **Bachelor's** degree in **Petroleum Engineering**. Further, he is a **Certified Instructor/Trainer, a Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management (ILM)** and a member of the **American Society of Petroleum Engineering (SPE), Society of Petroleum Resources Economists (SPRE), Association of Professional Engineering of Libya, Libyan Society of Earth Science and the Environment Friends Association of Libya**. Moreover, he is an **author/co-author** and published **various research papers** in local and international scientific journals and conferences. He has further delivered numerous trainings, courses, workshops, seminars and conferences globally.

### **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: Monday, 23<sup>rd</sup> of December 2024**

0730 – 0745	Registration & Coffee
0745 – 0800	Welcome & Introduction
0800 – 0815	<b>PRE-TEST</b>
0815 – 0845	<b>Introduction to Prospective, Contingent Resources &amp; Reserves under the SPE-PRMS</b>
0845 – 0930	<b>Understanding Oil &amp; Gas Reserves</b>
0930 – 0945	Break
0945 – 1030	<b>What is Deterministic?</b>
1030 – 1100	<b>The Difference between Certainty, Ignorance &amp; Risk</b>
1100 – 1145	<b>What are Probabilistic Reserves</b>
1145 – 1230	<b>Subjectivity &amp; the Expert Opinion</b>
1230 – 1245	Break
1245 – 1315	<b>Basics of Reservoir Characterization</b>
1315 – 1420	<b>The Principles of Reservoir Characterization &amp; Reserves Evaluation</b>
1420 – 1430	<b>Recap</b>
1430	Lunch & End of Day One

#### **Day 2: Tuesday, 24<sup>th</sup> of December 2024**

0730 – 0830	<b>Reserves Definition</b>
0830 – 0930	<b>Reserves Estimations &amp; Production Profiles</b>
0930 – 0945	Break
0945 – 1015	<b>Risks &amp; Uncertainties</b>
1015 – 1100	<b>Methods of Exploration Resource Estimation &amp; Risking</b>
1100 – 1145	<b>Main Concepts of Risks &amp; Uncertainties Management</b>
1145 – 1230	<b>Integrating Risks &amp; Uncertainties into Reserves Evaluation-Static Uncertainties, Dynamic Uncertainties, Geo-Stochastic Modeling, etc</b>
1230 – 1245	Break
1245 – 1315	<b>Methods for “Green-Field” Developments-Traps &amp; Pitfalls</b>
1315 – 1345	<b>Analogues &amp; Geological Modelling</b>
1345 – 1420	<b>Reservoir Stimulation</b>
1420 – 1430	<b>Recap</b>
1430	Lunch & End of Day Two

#### **Day 3: Wednesday, 25<sup>th</sup> of December 2024**

0730 – 0830	<b>Estimation of Reserves for “Brown Fields”</b>
0830 – 0930	<b>Classical Analysis</b>
0930 – 0945	Break
0945 – 1015	<b>Response Surface Analysis</b>
1015 – 1100	<b>Stochastic Simulation</b>
1100 – 1145	<b>Drilling, Production &amp; Operation Risk</b>
1145 – 1230	<b>Production Forecasting</b>
1230 – 1245	Break

1245 - 1315	<i>Long-Term Gas Controls</i>
1315 - 1345	<i>LNG &amp; DomGas</i>
1345 - 1420	<i>Industrial Contracts &amp; Oil Field Development</i>
1420 - 1430	<i>Recap</i>
1430	<i>Lunch &amp; End of Day Three</i>

**Day 4: Thursday, 26<sup>th</sup> of December 2024**

0730 - 0830	<i>Economic Evaluation &amp; Risking</i>
0830 - 0930	<i>Conventional &amp; Unconventional Gas</i>
0930 - 0945	<i>Break</i>
0945 - 1015	<i>Onshore Oil &amp; Unconventional Oil</i>
1015 - 1100	<i>Offshore Production &amp; Economic Risk</i>
1100 - 1145	<i>Portfolio Analysis</i>
1145 - 1215	<i>Why Most Companies Get it Wrong?</i>
1215 - 1230	<i>Break</i>
1230 - 1300	<i>How to Get it Right?</i>
1300 - 1330	<i>Look-Back Analysis &amp; Reserves Performances Indicators</i>
1330 - 1345	<i>Case Study</i>
1345 - 1400	<i>Course Conclusion</i>
1400 - 1415	<b>POST-TEST</b>
1415 - 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch &amp; End of Course</i>

**Practical Sessions**

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



**Course Coordinator**

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