



**COURSE OVERVIEW TM0571-4D**  
**Petroleum Economics**

**Course Title**

Petroleum Economics

**Course Reference**

TM0571-4D

**Course Duration/Credits**

Four days/2.4 CEUs/24 PDHs



**Course Date/Venue**

Session(s)	Date	Venue
1	October 07-10, 2024	Club B Meeting Room, Ramada Plaza by Wyndham Istanbul City Center, Istanbul, Turkey
2	December 09-12, 2024	Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

**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.***



Economics drives the entire oil and gas industry. Almost every decision is made on the basis of an economic evaluation. Economic evaluations are also performed to determine reserves and the "standardized measure of value" for reporting purposes for publicly held companies. In many cases, the goal of the company is to make decisions that have the best chance of maximizing the present-day profit.



Petroleum economics has a vital role to play in the Oil & Gas industry and it lies at the heart of all decision making. Various techniques have evolved over time in determining and calculating economic inputs, evaluating investments, quantifying risk and generating feasible portfolios. Petroleum economics brings together information and expertise across the E&P spectrum and a clear understanding of concepts such as cash flow analysis, organizational challenges, price forecasting, cost drivers and risk management is required.

Petroleum economics course covers essential foundation of petroleum economics, project economic evolution, and basic decision and risk analysis. It covers other key concepts like time value of money, cash flow basic, common economic indicators, fiscal systems, and project selection fundamentals.





This course is designed to provide participants with a detailed and an up-to-date overview of petroleum economics. It covers the concepts of uncertainty and risk and O&G best practices to aide the economic evaluations of new business projects; the project economics; the cashflow and economic indicators and profitability; the fiscal regimes; the economic assessment and decision making of international contracts; the project risk and uncertainty; and the project investment analysis that include incremental analysis, capital budgeting and project selection process, financing, contracting and ownership, multiple project analysis and decision making.

### **Course Objectives**

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

- Apply and gain a good working knowledge on petroleum economics
- Orient employees to concepts of uncertainty and risk and O&G best practices to aide the economic evaluations of new business projects
- Discuss project economics covering methods of evaluation, project lifecycle, stage-gate process, methods of forecasting production, prices and operating expenses, capital expenditure plans, etc.
- Identify cashflow and economic indicators and profitability
- Recognize fiscal regimes comprising of various concessionary systems, production-sharing contracts, service agreements and international trends in various fiscal systems
- Carryout economic assessment and decision making of international contracts
- Identify project risk and uncertainty covering sensitivity analysis, incorporating risk, calculation EMV & ENPV, etc.
- Employ project investment analysis that include incremental analysis, capital budgeting and project selection process, financing, contracting and ownership, multiple project analysis and decision making

### **Who Should Attend**

This course provides a wide understanding and deeper appreciation of petroleum economics for reservoir engineers and to those involved in oil & gas operational planning, exploration and production. This includes engineers and financial staff.




**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.

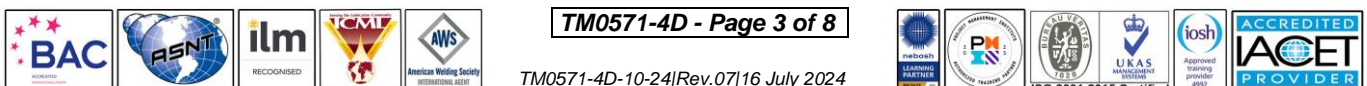
Haward Technology Middle East will award **2.4 CEUs** (Continuing Education Units) or **24 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation 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.

**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:



**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 **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.



**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**

Istanbul	<b>US\$ 5,000</b> per Delegate + <b>VAT</b> . This rate includes Participants Pack (Folder, Manual, Hand-outs, etc.), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Dubai	<b>US\$ 4,500</b> per Delegate + <b>VAT</b> . 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	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	<b>PRE-TEST</b>
0830 – 0930	<b>Introduction to Project Economics</b> Methods of Evaluation • Project Lifecycle • Stage-gate Process • Methods of Forecasting Production • Prices and Operating Expenses • Capital Expenditure Plans
0930 – 0945	Break
0945 – 1100	<b>Introduction to Project Economics (cont'd)</b> Concepts like Inflation, Risks, Interests (Nominal & Effective Rates), Equivalence, Future Value of Present Sum, Present Value of Future Sum, Future Value & Present Value of Ordinary Annuity & Annuity Due, etc. • Project Financing • Payments & Types (including – Constant Periodic Payments, Constant Principal Payments, Interest Only Payments, Interest During Construction etc.) • Application on Excel to Practice the Concepts





1100 – 1230	<b>Cash Flow &amp; Economic Indicators</b> Concepts of Revenue & Operating Expenses • Capital Expenditures • Discounting Concepts & Present Value, Economic Indicators with their Usage (including DPI, IRR, Hurdle Rate, WACC etc.) • Basic Data Requirement for Forecasting Product Stream, Dependence of Capital Expenditure (CAPEX), CAPEX during Production, Breakdown of Operating Expenditure (OPEX) • Cost Estimation – Types of Costs, Estimation Tools & Techniques, Project Cost Management (Dependence & Criticality of Cost Estimates) • Economies of Scale
1230 – 1245	Break
1245 – 1420	<b>Cash Flow &amp; Economic Indicators (cont'd)</b> ATAX Cash Flow Additional Variables • Depreciation Methods (Straight Line Depreciation, Declining Balance with Switch to Straight Line, Sum –of–the–Years Digit Depreciation, Units of Production Depreciation etc.) • Cost of Equity & Cost of Debt & Weighted Average Cost of Capital • Practice & Apply WACC Calculations
1420 – 1430	<b>Recap</b>
1430	Lunch & End of Day One

**Day 2**

0730 – 0930	<b>Profitability</b> Typical Profitability Indicators – Cumulative Net Cash–Flow (Discounted & Undiscounted), Discounted Payback Period, Internal Rate of Return (IRR), Net Present Value (NPV), Profitability Index (PI), Long–Run Marginal Cost (LRMC), Maximum Sustainable Risk Netback Value & Indexed Pricing Netback Value (NBV), Base Year & ROR Approach, LRMC Approach, Indexed Netback Pricing etc.) • Funds Flow & Discounting Frequency
0930 – 0945	Break
0945 – 1100	<b>Profitability (cont'd)</b> NPV Dependence on CF Assumptions • International Petroleum Agreements (Joint Venture, Risk Service) with Special Reference to Fiscal System Comparison, Sliding Scale Trenches & Concessionary System's Cash–Flow
1100 – 1230	<b>Fiscal Regimes</b> Various Concessionary Systems • Production-Sharing Contracts
1230 – 1245	Break
1245 – 1420	<b>Fiscal Regimes (cont'd)</b> Service Agreements • International Trends in Various Fiscal Systems
1420 – 1430	<b>Recap</b>
1430	Lunch & End of Day Two

**Day 3**

0730 – 0930	<b>Economic Assessment (of International Contracts) &amp; Decision Making</b> Crafting Fiscal Terms • Front- End Loading Index • Investment Selection Decision–Making (Screening, Mutually Exclusive Investment Alternatives, Non–Mutually Exclusive Investment Alternatives Using Various Profitability Concepts)
0930 – 0945	Break





0945 – 1100	<b>Economic Assessment (of International Contracts) &amp; Decision Making (cont'd)</b> Ranking Project–Non-Mutually Exclusive Investments • Probability Concepts (Discrete, Binomial, Multinomial, Lognormal, Triangular Distribution) • Service Producing Investments
1100 – 1230	<b>Economic Assessment (of International Contracts) &amp; Decision Making (cont'd)</b> Lease Versus Buy Decisions (With Special Reference to Uncertainty in Capital Investments & Using Techniques Like Sensitivity Analysis, Tornado Chart, Spider Diagram) • Expected Value Concepts–EMV, Probability Tables, Decision Trees
1230 – 1245	Break
1245 – 1420	<b>Economic Assessment (of International Contracts) &amp; Decision Making (cont'd)</b> Simulation \ Spreadsheet Applications to Practice Various Scenarios
1420 – 1430	<b>Recap</b>
1430	Lunch & End of Day Three

**Day 4**

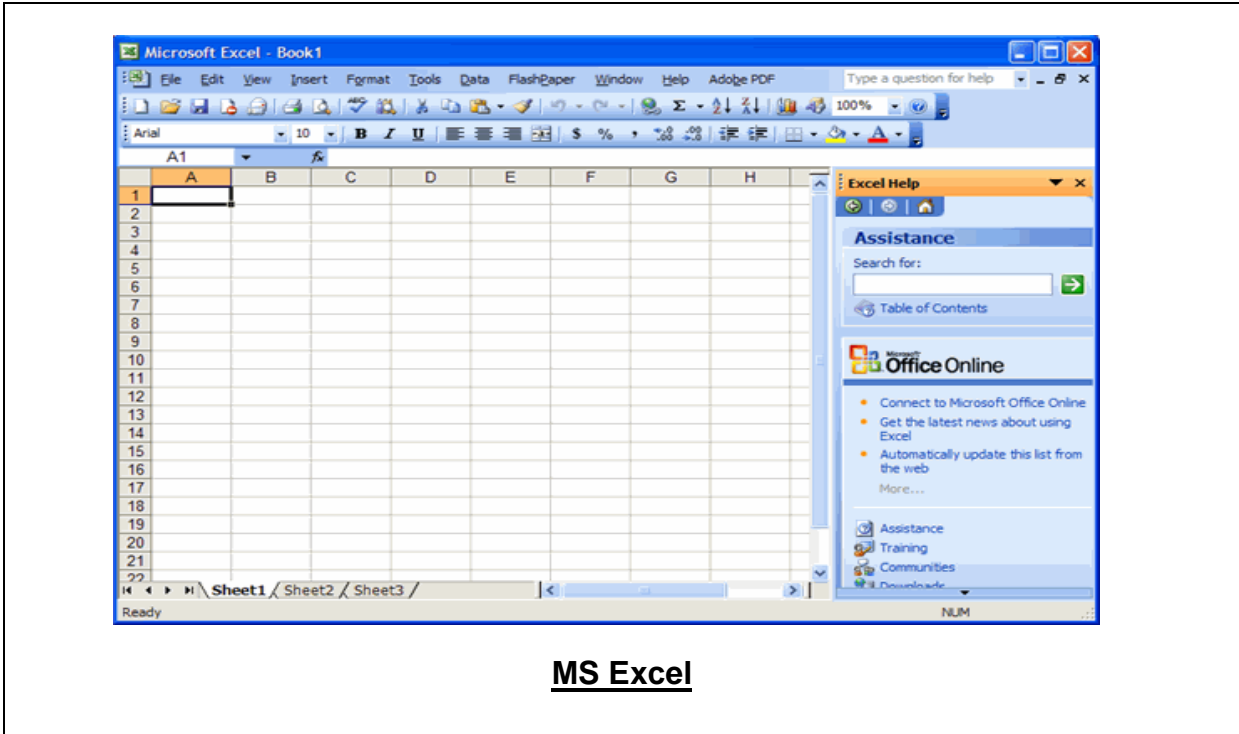
0730 – 0930	<b>Project Risk &amp; Uncertainty</b> Sensitivity Analysis • Incorporating Risk
0930 – 0945	Break
0945 – 1100	<b>Project Risk &amp; Uncertainty (cont'd)</b> Calculating EMV & ENPV, etc.
1100 – 1230	<b>Project Investment Analysis</b> Incremental Analysis • Capital Budgeting & Project Selection Process • Financing
1230 – 1245	Break
1245 – 1345	<b>Project Investment Analysis (cont'd)</b> Contracting & Ownership • Multiple Project Analysis • Decision Making
1345 – 1400	<b>Course Conclusion</b>
1400 – 1415	<b>POST-TEST</b>
1415 – 1430	Presentation of Course Certificates
1430	Lunch & End of Course



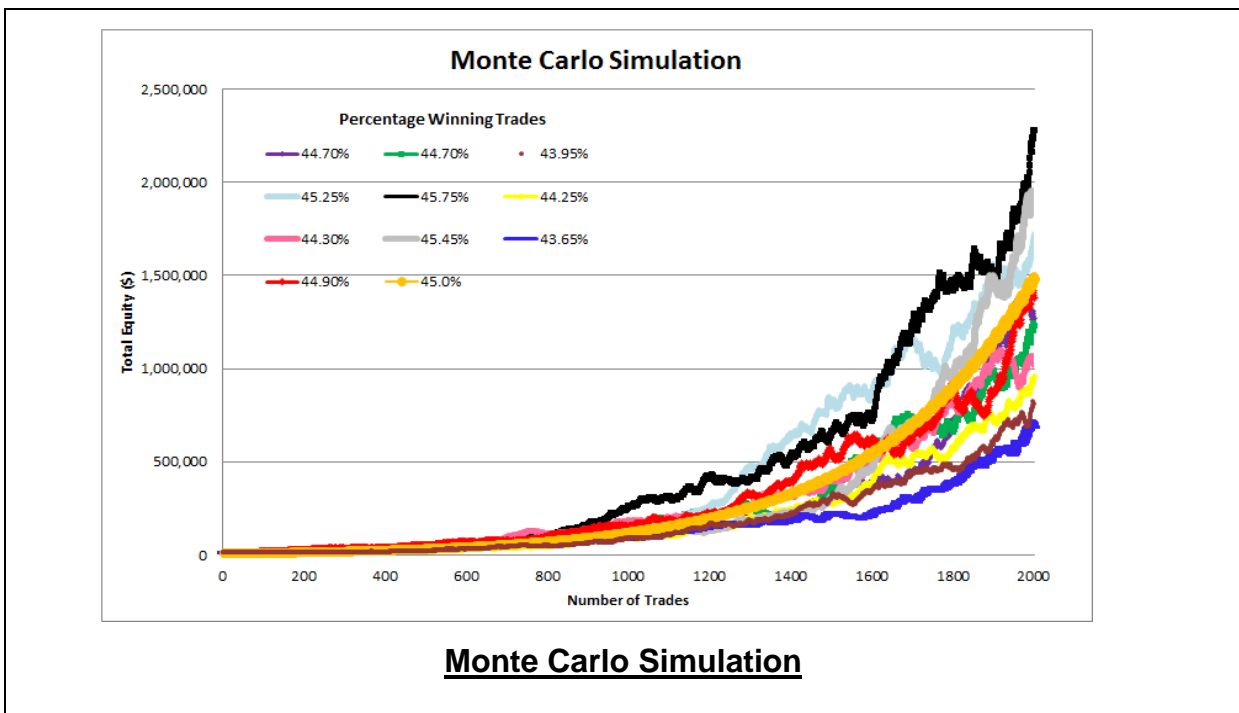


### Simulator (Hands-on Practical Sessions)

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 “MS Excel” and “Monte Carlo Simulation”.



MS Excel



Monte Carlo Simulation

### Course Coordinator

Mari Nakintu, Tel: +971 2 30 91 714, Email: [mari1@haward.org](mailto:mari1@haward.org)

