COURSE OVERVIEW PE1064
Crude Economics

Course Title
Crude Economics

Course Date/Venue
September 14-18, 2025/ Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE

Course Reference
PE1064

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

Course Description

This practical and highly-interactive course includes real-life case studies 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 Crude Economics. It covers the global crude oil industry, types and classifications of crude oil and market structures and pricing mechanisms; the factors influencing crude oil prices, term contracts versus spot deals, exchange-traded contracts, risk and hedging strategies and incoterms and contract logistics; the crude oil benchmarking and arbitrage, crude assay data and refinery configurations and complexity; the refining processes, product specifications and market values; and the crude valuation techniques and crude slate optimization.

Further, the course will also discuss the refining margins and economics, planning and scheduling interface and economic evaluation of crude alternatives; the linear programming models for crude economics and the tools and software in crude economics; the key performance indicators (KPIs), crude blending economics and storage and logistics economics; the supply chain risk, volatility management and swapping economics and motivations; the operational and quality considerations; and the contractual and commercial terms and regional case examples.

During this interactive course, participants will learn the environmental and regulatory considerations, disruption scenarios, sensitivity to price shocks, strategic reserves usage and contingency crude sourcing plans; the crude procurement strategy development covering annual sourcing strategy, contract structuring, price negotiations and timing and benchmarking performance; and the strategic long-term crude planning comprising of crude availability trends, emerging supply sources, impact of energy transition and integration with corporate planning.

Course Objectives

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

- Apply and gain an in-depth knowledge on crude economics
- Discuss the global crude oil industry, types and classifications of crude oil and market structures and pricing mechanisms
- Identify factors influencing crude oil prices, term contracts versus spot deals, exchange-traded contracts, risk and hedging strategies and incoterms and contract logistics
- Determine crude oil benchmarking and arbitrage, crude assay data and refinery configurations and complexity
- Illustrate refining processes, product specifications and market values, crude valuation techniques and crude slate optimization
- Recognize refining margins and economics, plan and schedule interface and apply economic evaluation of crude alternatives
- Describe linear programming models for crude economics and identify the tools and software in crude economics
- Discuss key performance indicators (KPIs), crude blending economics and storage and logistics economics
- Carryout supply chain risk and volatility management and discuss swapping economics and motivations, operational and quality considerations, contractual and commercial terms and regional case examples
- Explain environmental and regulatory considerations, disruption scenarios, sensitivity to price shocks, strategic reserves usage and contingency crude sourcing plans
- Apply crude procurement strategy development covering annual sourcing strategy, contract structuring, price negotiations and timing and benchmarking performance
- Employ strategic long-term crude planning comprising of crude availability trends, emerging supply sources, impact of energy transition and integration with corporate planning

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 crude economics for technical professionals, business and strategy roles, energy industry professionals, financial analysts, decision-makers and leaders, cross-functional teams, advanced learners and researchers and other technical 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

Haward's certificates are accredited by the following international accreditation organizations:

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). 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.

- 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.

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. Karl Thanasis, PEng, MSc, MBA, BSc, is a **Senior Engineer** with over **30 years** of practical experience within the **Oil**, **Gas**, **Refinery** and **Petrochemical** industries. His wide expertise includes **Process Fired Heaters**, **Boilers**, **Oil & Gas Processing**, **Oil Field** Operation, **Production** Operation, **Plant** Operation & Commissioning, **Crude Oil Desalting Process**, **Gas Conditioning**, **NGL Recovery & NGL Fractionation**, **Plant Shutdown**, **Flare System**, **Pre-Settling & Storage Tanks**, **Water Desalination Technology**, **Water Treatment Technology**, **Boiler Water Treatment**, **MED**, **MSF**, **RO**, **Oily Water Treatment**, **Oily Water Settling Process**, **Plant Auxiliary & Utility** System, **Vacuum De-aerator**, **Water Filtration** System, **Oil Recovery** System & **Chemical Injection**, **Propylene Compressor & Turbine**, **Process Plant Optimization Technology & Continuous Improvement**, **Process Engineering** Calculations, **Coke Cooler**, **Process Plant** Start-up & Commissioning, Principles of Operations Planning, Operations Abnormalities & Plant Upset, Process Equipment Design, Process Plant Performance & Efficiency, **Gas Sweetening & Sulphur Recovery**, **Process Plant** Performance & Efficiency, **Distillation-Column** Operation, **Oil Movement & Troubleshooting**, **Process Plant** Operations & Control, **Process Equipment** Operation, **Fired Heaters & Air Coolers**, **Heat Exchangers**, **Pumps**, **Compressors**, **Crude Desalter**, **Pressure Vessels & Valves**, **Process Plant Start Up & Commissioning**, **Process Plant** Optimization Technology & Continuous Improvement, Pressure Relief Devices (**PSV**), **Pumps & Valve** Maintenance & Troubleshooting, Centrifugal **Compressors**, Reciprocating **Air Compressors**, **Vibration Analysis**, **Turbomachinery**, **Mechanical Alignment**, **Rotating Equipment**, **Diesel Generators**, **Heat Exchangers**, **Lubrication** Technology, **Bearing**, **Predictive Maintenance** and **Root Cause Analysis.**

Mr. Thanasis has acquired his thorough and practical experience as the **Project Manager**, **Plant Manager**, **Area Manager - Equipment Construction**, **Construction Superintendent**, **Project Engineer** and **Design Engineer**. His duties covered **Plant Preliminary Design**, **Plant Operation**, **Write-up** of **Capital Proposal**, **Investment Approval**, **Bid Evaluation**, **Technical Contract Write-up**, **Construction** and **Sub-contractor Follow up**, **Lab Analysis**, **Sludge Drying** and **Management** of **Sludge Odor** and **Removal**. He has worked in various companies worldwide in the **USA**, **Germany**, **England** and **Greece**.

Mr. Thanasis is a **Registered Professional Engineer** in the **USA** and **Greece** and has a **Master's** and **Bachelor's** degree in **Mechanical Engineering** with **Honours** from the **Purdue University** and **SIU** in **USA** respectively as well as an **MBA** from the **University of Phoenix** in **USA**. Further, he is a **Certified Internal Verifier/Trainer/Assessor** by the **Institute of Leadership & Management** (**ILM**) a **Certified Instructor/Trainer** and has delivered numerous trainings, courses, seminars, workshops and conferences worldwide.

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.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Fee

US$ 5,500 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 workshop for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1: ***Sunday, 14th of September 2025***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Overview of the Global Crude Oil Industry*** *History & Evolution of the Crude Oil Industry • Key Global Producers & Consumers • OPEC & Non-OPEC Dynamics • Crude Oil Supply Chain & Logistics*
0930 – 0945	*Break*
0945 – 1030	***Types & Classifications of Crude Oil*** *API Gravity & Sulfur Content • Sweet versus Sour, Light versus Heavy Crude • Market Benchmarks (Brent, WTI, Dubai) • Typical Regional Crudes & Blends*
1030 – 1130	***Market Structures & Pricing Mechanisms*** *Spot Markets versus Futures Markets • Role of Price Reporting Agencies (Platts, Argus) • Netback & Formula Pricing • Understanding Forward Curves*
1130 – 1215	***Factors Influencing Crude Oil Prices*** *Geopolitical Factors • Supply-Demand Balance • Inventories & Strategic Reserves • Macroeconomic & Currency Impacts*
1215 – 1230	*Break*
1230 – 1330	***Crude Trading & Contracts*** *Term Contracts versus Spot Deals • Exchange-Traded Contracts • Risk & Hedging Strategies • Incoterms & Contract Logistics*

1330 – 1420	***Crude Oil Benchmarking & Arbitrage*** *Regional Price Differentials • Arbitrage Opportunities • Crude Slates & Pricing Differentials • Impact of Freight on Arbitrage Economics*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day One*

Day 2: ***Monday, 15th of September 2025***

0730 – 0830	***Understanding Crude Assay Data*** *Assay Report Components • Distillation Curves & Product Yields • Metals, Salts & Contaminants • Crude Compatibility & Blending Issues*
0830 - 0930	***Refinery Configurations & Complexity*** *Types of Refineries (Topping, Hydroskimming, Conversion) • Nelson Complexity Index • Unit Integration & Flexibility • Impact on Crude Valuation*
0930 – 0945	*Break*
0945 – 1100	***Refining Processes Overview*** *Atmospheric & Vacuum Distillation • Conversion Units (FCC, Hydrocracking, Coking) • Treating & Product Recovery Units • Hydrogen Management & Sulfur Recovery*
1100 – 1215	***Product Specifications & Market Values*** *Key Refined Products (Gasoline, Diesel, Jet Fuel, etc.) • Product Specifications & Regulations • Product Pricing & Margin Analysis • Seasonal & Regional Demand Variations*
1215 – 1230	*Break*
1230 – 1330	***Crude Valuation Techniques*** *Gross Product Worth (GPW) • Net Product Value (NPV) • Linear Programming Models • Refinery Gate Pricing*
1330 – 1420	***Crude Slate Optimization*** *Crude Compatibility & Blending • Crude Selection for Margin Maximization • Impact of Refinery Configuration • Case Study: Optimal Slate Selection*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Two*

Day 3: ***Tuesday, 16th of September 2025***

0730 – 0830	***Refining Margins & Economics*** *Crack Spreads & Refinery Margins • Contribution Margins by Unit • Cost Structure & Fixed/Variable Costs • Margin Sensitivity to Crude & Product Prices*
0830 – 0930	***Planning & Scheduling Interface*** *Role of LP in Refinery Planning • Crude & Feedstock Scheduling • Product Blending Optimization • Inventory & Tankage Constraints*
0930 – 0945	*Break*
0945 – 1100	***Economic Evaluation of Crude Alternatives*** *Netback Comparison • Value versus Price Approach • Logistics & Delivery Timing Impact • Trade-offs & Decision Drivers*

1100 – 1215	***Linear Programming Models for Crude Economics*** *Introduction to Refinery LP Models • Objective Function & Constraints • Crude-Specific Run Plans • Economic Sensitivity Analysis*
1215 – 1230	*Break*
1230 – 1330	***Tools & Software in Crude Economics*** *Aspen PIMS / HYSYS • Crude Manager, Petro-SIM • Custom Economic Models in Excel • Data Integration & Automation Tools*
1330 – 1420	***Key Performance Indicators (KPIs)*** *Margin Per Barrel • Crude Yield & Loss Tracking • Operating Cost Efficiency • Planning versus Actual Gap Analysis*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Three*

Day 4: Wednesday, 17th of September 2025

0730 – 0830	***Crude Blending Economics*** *Blending Objectives & Constraints • Optimization Techniques • Penalties & Product Spec Compliance • Online versus Offline Blending Systems*
0830 – 0930	***Storage & Logistics Economics*** *Terminal Storage Planning • Pipeline & Marine Logistics Costs • Demurrage Impact on Economics • Strategic Inventory Decisions*
0930 – 0945	*Break*
0945 – 1100	***Supply Chain Risk & Volatility Management*** *Price Risk & Hedging Strategies • Currency & Geopolitical Risks • Use of Financial Derivatives • Risk-Adjusted Decision Making*
1100 – 1215	***Crude Swaps & Exchanges*** *Swapping Economics & Motivations • Operational & Quality Considerations • Contractual & Commercial Terms • Regional Case Examples*
1215 – 1230	*Break*
1230 – 1330	***Environmental & Regulatory Considerations*** *IMO 2020, Carbon Regulations • Sulfur Reduction & Clean Fuels • Environmental Tax Implications • Impact on Crude Valuation & Planning*
1330 – 1420	***Scenario Planning & Contingency Economics*** *Disruption Scenarios (Supply Cuts, Sanctions) • Sensitivity to Price Shocks • Strategic Reserves Usage • Contingency Crude Sourcing Plans*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Four*

Day 5: Thursday, 18th of September 2025

0730 – 0830	***Case Study: Comparative Crude Evaluation*** *Analyze Two Regional Crudes • Calculate GPW & NPV • Consider Refinery Configuration Fit • Recommend Crude Selection Strategy*
0830 – 0930	***Refining Margin Simulation*** *Build Margin Model from Scratch • Simulate Margin Under Various Price Scenarios • Analyze Breakeven Points • Discuss Risk & Uncertainty*
0930 – 0945	*Break*

0945 – 1100	***Crude Procurement Strategy Development*** *Annual Sourcing Strategy • Contract Structuring • Price Negotiations & Timing • Benchmarking Performance*
1100 – 1215	***Strategic Long-Term Crude Planning*** *Crude Availability Trends • Emerging Supply Sources (e.g., Shale, Offshore) • Impact of Energy Transition • Integration with Corporate Planning*
1215 – 1230	*Break*
1230 – 1330	***Workshop: Crude Optimization Challenge*** *Team-Based Simulation • Input: Crude Assay, Refinery Setup, Market Prices • Output: Optimal Crude Selection & Margin • Presentation of Results & Peer Review*
1330 – 1345	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1345 – 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