

COURSE OVERVIEW FM0645

**International Oil Supply, Transportation, Refining and Trading
(E-Learning Module)**

Course Title

International Oil Supply, Transportation, Refining and Trading (E-Learning Module)

Course Reference

FM0645

Course Format & Compatibility

SCORM 1.2. Compatible with IE11, MS-Edge, Google Chrome, Windows, Linux, Unix, Android, IOS, iPadOS, macOS, iPhone, iPad & HarmonyOS (Huawei)

Course Duration

30 online contact hours
(3.0 CEUs/30 PDHs)



Course Description



This E-Learning is designed to provide participants with a detailed and up-to-date overview of international oil supply, transportation, refining and trading. It covers the origin, migration and accumulation of petroleum; the essential requirements for hydrocarbon accumulation; the seven critical elements that are necessary for subsurface hydrocarbon accumulations to occur; the fundamentals of oil & gas geology and petroleum engineering; and the petroleum geology, petroleum-related hydrocarbons, petroleum occurrence and required conditions for geologic accumulation of petroleum.

Further, the course will also discuss the hydrocarbon composition and occurrence, natural gas, crude oil and hydrocarbon and mixed compounds; the average organic composition of crude oil; the stages of petroleum exploration, production and processing; the well logging, oil investing, logging procedure and well logging while drilling; the geological and geophysical logs and well logging exploration; the well completion, casing and cementing; the various types of completion; the cased hole completion, production tubing, production tree installation, essence of international oil supply and key drivers of the energy future; the global demand, demand for natural gas, global energy supply and crude oil price movements; and the refined products trading and petroleum industry structure.



Moreover, the course will also cover the oil and natural gas value chain; the upstream oil and gas sector, midstream sector and downstream process and sector; the distribution of refined products, petroleum refining, oil refining and distillation of crude oil; the crude oil fundamentals, crude oil contract specs, tips on trading crude oil futures and volatile market for crude oil futures; the oil markets drivers, oil supply drivers, oil demand drivers, financial markets and derivatives trading; the types of trading, trading strategies, supply and demand; the commodity price cycle affecting oil prices and market forces impacting oil prices; the crude netbacks, break even analysis, key components of full cycle costs and some of the pitfalls of calculating costs; the crude oil and natural gas product transportation; the different types of tankers, various types of oil tankers and other type of tankers; and the pipeline transportation, pipeline system, petroleum product pipeline information and gas transmission.

During this interactive course, participants will learn the spot tanker freight costs, cost structure, tanker customers and the impact on tankers regarding the price of oil; the demand for oil, supply of oil, vessel supply and how tankers are chartered; the oil and natural gas logistics, oil logistics performance and costs, potential developments and barriers, open sea transport and railway and truck transport; the oil storage, liquefied natural gas (LNG), liquefaction plants, gas storage facilities and potential and barriers; the risks and marine insurance of oil tanker, risk assessment, general information about marine and cargo insurance; and the risk management, insurance in specific and how spot oil purchase/sale contracts are structured.

Course Objectives

After completing the course, the employee will:-

- Apply and gain comprehensive knowledge on international oil supply, transportation, refining and trading
- Understand how to value crude oil based on product market prices and how to evaluate spot tanker freight costs
- Understand how to evaluate crude netbacks, refining margins and alternative crude breakeven
- Understand how tankers are chartered and how spot oil purchase/sale contracts are structured
- Discuss the origin, migration and accumulation of petroleum and the essential requirements for hydrocarbon accumulation
- Identify the seven critical elements that are necessary for subsurface hydrocarbon accumulations to occur
- Recognize the fundamentals of oil & gas geology and petroleum engineering
- Determine petroleum geology, petroleum-related hydrocarbons, petroleum occurrence and required conditions for geologic accumulation of petroleum
- Discuss hydrocarbon composition and occurrence, natural gas, crude oil, hydrocarbon compounds and mixed compounds
- Identify the average organic composition of crude oil and the stages of petroleum exploration, production and processing



- Discuss the historical overview of petroleum production and exploration, modern history and thematic topics in petroleum geology (crossroads of chemistry, physics, geology)
- Carryout well logging and oil investing, logging procedure and well logging while drilling
- Recognize geological and geophysical logs and perform well logging exploration
- Discuss well completion, casing and cementing as well as choose and identify the various types of completion
- Describe cased hole completion, production tubing, production tree installation, the essence of international oil supply and key drivers of the energy future
- Assess global demand, demand for natural gas, global energy supply and crude oil price movements
- Discuss the oil market at a junction, refined products trading, petroleum industry structure and the oil and natural gas value chain
- Determine upstream oil and gas sector, business cycle of upstream, midstream sector and midstream operations and processes
- Characterize downstream process and sector and explain the distribution of refined products, petroleum refining, oil refining and distillation of crude oil
- Discuss crude oil fundamentals, crude oil contract specs, tips on trading crude oil futures and volatile market for crude oil futures
- Describe price movements for crude oil, day trading crude oil futures and crude oil futures trends
- Make a profit in crude oil trading, read the long-term chart, pick your venue and discuss trading fundamentals and terminology
- Recognize oil markets drivers, oil supply drivers, oil demand drivers, financial markets and derivatives trading
- Identify energy markets participants, the market users, key market players and basic trading terminology
- Differentiate spot price versus forward price including forward curve, bid offer spread, liquidity, market direction and exposure
- List the types of trading covering, asset, hedging, arbitrage and investment
- Carryout trading strategies and explain supply and demand, OPEC output, crude oil prices and the value of crude oil based on product market prices
- Identify the commodity price cycle affecting oil prices and market forces impacting oil prices
- Evaluate crude netbacks, refining margins as alternative crude breakeven and discuss the importance of netback
- Calculate gross refining margins and review refinery cost and margin analytics
- Apply break even analysis, calculate the breakeven cost of producing oil and gas and discuss the importance of breakeven cost of oil and gas
- Identify the key components of full cycle costs including some of the pitfalls of calculating costs



- Illustrate crude oil and natural gas product transportation and identify the role of logistics hubs
- Recognize the typical mode wise transportation crude oil and petroleum products industry
- List the different types of tankers, the various types of oil tankers and other type of tankers
- Describe pipeline transportation, pipeline system, petroleum product pipeline information and gas transmission
- Evaluate spot tanker freight costs as well as recognize cost structure, tanker customers and the impact on tankers regarding the price of oil
- Assess the demand for oil, supply of oil, vessel supply and how tankers are chartered
- Discuss oil and natural gas logistics, oil logistics performance and costs, potential developments and barriers, open sea transport and railway and truck transport
- Determine oil storage, liquefied natural gas (LNG), liquefaction plants, gas storage facilities and potential and barriers
- Identify risks and marine insurance of oil tanker, apply risk assessment, discuss general information about marine and cargo insurance
- Employ risk management, recognize the risk that may face tanker and discuss insurance in specific and how spot oil purchase/sale contracts are structured

Who Should Attend

This course provides an overview for all significant aspects and considerations of international oil supply, transportation, refining and training for business development managers, corporate planning professionals, lawyers, law firms' personnel, geoscientists, engineers, refiners, bankers, accountants, auditors, members of board and senior oil executives, media personnel who interface with traders and trading, government regulators, tax and finance advisors, auditors, compliance officers, equity and financial analysts and bankers, joint venture officers and contract negotiators.

Training Methodology

This Trainee-centered course includes the following training methodologies:-

- Talking presentation Slides (ppt with audio)
- Simulation & Animation
- Exercises
- Videos
- Case Studies
- Gamification (learning through games)
- Quizzes, Pre-test & Post-test


Every section/module of the course ends up with a Quiz which must be passed by the trainee in order to move to the next section/module. A Post-test at the end of the course must be passed in order to get the online accredited certificate.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course.

Certificate Accreditations


Certificates are accredited by the following international accreditation organizations: -

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USA International Association for Continuing Education and Training (IACET)

Haward Technology is an Authorized Training Provider by the International Association 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 1-2013 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 1-2013 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 Association 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 Fee

As per proposal

Course Contents

- Introduction to How Oil was Formed
- Origin, Migration and Accumulation of Petroleum: Geological and Physical Aspects
- Origin, Migration and Accumulation of Petroleum: Discussion
- Essential Requirements for Hydrocarbon Accumulation
- The Seven Critical Elements are Necessary for Subsurface Hydrocarbon Accumulations to Occur
- Reservoir Rock
- General 3-D Definition
- Character of Upper and Lower Boundaries
- Depositional Environment
- Petrographic Characteristics
- Source Rock
- Seal
- Thermal History
- Migration and Trapping
- Geologic History
- Structural History and style
- Fundamentals of Oil & Gas Geology and Petroleum Engineering
- The Basic Overview
- Petroleum Geology
- Petroleum-Related Hydrocarbons (Hydrogen-carbon Based Organic Compounds)
- Petroleum Occurrence
- The Petroleum Environment
- Petroleum Generation
- Marine Biogenic Sediment Production
- Nonmarine Biogenic Sediment Production
- Sedimentary Basins: Accumulations of Sediments In Subsiding Basins, Deltas, Continental Shelves, Tectonic Depressions
- Petroleum Reservoirs
- Impermeable Seals and Caprock
- Traps – Containment of Petroleum in Subsurface
- Required Conditions for Geologic Accumulation of Petroleum



- Hydrocarbon Composition and Occurrence
- Natural Gas
- Crude Oil
- Hydrocarbon Compounds
- Paraffins
- Naphthene
- Aromatics (Ring Structure Molecules)
- Mixed Compounds
- Average Organic Composition of Crude Oil
- Average Crude Oil Distillates
- Stages of Petroleum Exploration, Production and Processing
- Historical Overview of Petroleum Production and Exploration
- Early History
- Liquid Oil and Semi-Solid
- 200-400 B.C. Greeks
- 1600-1800 A.D. Europeans
- 1800's Refineries Developed for Fuel Products
- Modern History
- 1859 First successful / commercial oil well drill
- Early 1900's
- Mid-1900's / 1960's
- 2000's
- Thematic Topics in Petroleum Geology (Crossroads of Chemistry, Physics, Geology)
- Physical and Chemical Properties of Petroleum
- The Subsurface Geologic Environment
- Generation and Migration of Petroleum
- Reservoir Characterization
- Traps and Seals
- Production Methods
- Sedimentary Basins and Petroleum Systems
- Nonconventional Petroleum Resources
- What is Well Logging and Why Does It Matter?
- What Well Logs Show



- Well Logging and Oil Investing
- Other Reasons for Well Logging
- Logging Procedure
- Well Logging While Drilling
- Geological and Geophysical Logs
- Types of Logs
- Continue to Explore Well Logging
- Well Completion
- Casing and Cementing
- Choosing Type of Completion
- Open Hole Completion
- Cased Hole Completion
- Production Tubing
- Installing the Production Tree
- In Summation
- Summary
- Global Reserves, Production & Trade
- Essence of International Oil Supply
- The Biggest Increase Since the 1980s
- Key Drivers of the Energy Future
- Demographic Factors
- Global Primary Energy Sources
- Global Primary Energy Demand
- Global Crude Oil
- Global Demand
- Demand Too is Price Inelastic
- Petroleum Demand
- Worldwide Petroleum Liquids Demand
- Worldwide Natural Gas Demand
- Demand for Natural Gas
- Growing Energy Demand is Projected
- Growing World Energy Demand (Millions of Barrels per day)
- BAU Projection of Primary Energy Sources

- Global Energy Supply & Demand
- Oil Market Highlights Crude Oil Price Movements
- The Oil Market at a Junction
- Refined Products Trading
- Petroleum Industry Structure
- The Oil and Natural Gas Value Chain
- Exploration
- Preparing the Drill
- Drilling
- Extracting the Oil
- Production
- Transport
- Market-
- Petroleum Industry Structure
- The American Petroleum Institute Divides the Petroleum Industry into Five Sectors
- Upstream Oil & Gas Sector
- Business Cycle of Upstream
- Midstream Sector
- Midstream Operations & Processes
- Gathering
- Transportation
- Pipelines
- Tankers
- Storage
- Midstream Gas Sector
- Downstream Process and Sector
- Oil Refining Processes
- Natural Gas Processing
- Characteristics of Downstream Process Sector
- Distribution of Refined Products
- Production Adding Value
- Petroleum Refining
- What is Oil Refining?

- Distillation of Crude Oil
- Refined Product
- Petrochemical Product
- Typical Fuels Refinery
- Petroleum Refining Process
- What is in a Barrel of Crude Oil?
- The Basics of Trading Crude Oil Futures
- Introduction
- Crude Oil Fundamentals
- Crude Oil Contract Specs
- Tips on Trading Crude Oil Futures
- Volatile Market for Crude Oil Futures
- Price Movements for Crude Oil
- Day Trading Crude Oil Futures
- Crude Oil Futures Trends
- Making a Profit in Crude Oil Trading
- Introduction
- Learn What Moves Crude Oil
- Understand the Crowd
- Choose Between Brent and WTI Crude Oil
- Read the Long-Term Chart
- Pick Your Venue
- Summary
- Oil Trading Fundamentals – Trading Fundamentals and Trading Terminology
- Oil Markets Drivers
- Processing
- Storage
- Transportation
- Reasons for Open Arbitrage
- Oil Supply Drivers
- OPEC
- Stocks
- Cost of Production by Region Source

- Oil Demand Drivers
- Introduction to Financial Markets and Derivatives Trading
- What Makes a Market
- Energy Markets Participants
- The Market: Users
- Key Market Players
- Hedger
- Arbitrageur
- Basic Trading Terminology
- Position: Long/Short
- Long
- Short
- Spot Price vs. Forward Price
- Spot Price
- Forward Price
- Forward Curve
- Forward Curve Explained
- Bid-Offer Spread
- Liquidity
- Market Direction: Bullish/Bearish
- Exposure
- Physical Exposure
- Priced Exposure
- Types of Trading
- Asset
- Hedging
- Arbitrage
- Speculation
- Investment
- Trading Strategies
- The Dissection of Crude Oil Price
- Introduction
- Who's who in Global Oil Markets



- Oil Prices Relate to Many Uncertain Factors
- Many Factors Influence the Formation of Oil Prices and Other Energy Prices
- Supply and Demand
- OPEC Output
- Weather
- Geopolitical and Economic Events have Driven Large Movements in World Oil Prices
- Crude Oil Prices
- Rising Oil Prices
- Cost Inflation Dampens Investment Impact
- Rising Costs Hamper Projects
- Crude Oil Prices
- World Crude Oil Prices
- A Short History of the Rise (and Fall) of Oil Prices
- Present and Future Global Oil and Liquids Supply Cost Curve
- Cost of Supply Curve for Global Oil 2020
- Overall Cost to Produce One Barrel of Crude Oil
- Falling Oil Prices
- Dropping? Why are Oil Prices
- OPEC's Surprising Response: Let Prices Keep Falling
- Global Consequences of Falling Oil Prices
- When Oil Prices Move Up?
- How to Value Crude Oil Based on Product Market Prices
- Key Takeaways
- What Drives Oil Prices?
- The Determinants of Oil Prices
- Hedgers
- Speculators
- The Other Key Factor in Determining Oil Prices is Sentiment
- Commodity Price Cycle Affecting Oil Prices
- Market Forces Impacting Oil Prices
- Conclusion
- How to Evaluate Crude Netbacks and Refining Margins and Alternative Crude Breakeven



- What is Netback?
- How is Netback Calculated?
- Why is Netback Important?
- Netback – Worked Example
- Operating Netback
- Why is Refinery Margins?
- How do you Calculate Gross Refining Margins?
- How Refining Margins are Key Indicators of Refining Profitability?
- Refinery Cost & Margin Analytics – Key Features
- How to use the Refinery Cost & Margin Analytics Service
- Break-Even Analysis
- How to Calculate the Break Even Cost of Producing Oil & Gas
- What do we Mean by the “Break Even Cost of Oil and Gas”?
- Why is the Break Even Cost of Oil & Gas Important?
- What are the Key Components of Full Cycle Costs
- How do We Calculate Each Component?
- Some of the Pitfalls of Calculating Costs
- Recap
- Crude Oil and Natural Gas Product Transportation
- The Role of Logistics Hubs
- Crude Oil / Petroleum Product Transportation
- Mode Wise Transportation of Crude Oil and Petroleum Products
- Typical Mode Wise Transportation Crude Oil & Petroleum Products – Industry
- Different Types of Tankers
- Crude Unloading from Tanker
- What is a Tanker?
- Making of World’s First True Tank Vessel
- Oil Tankers
- Chemical Tankers
- LNG Tankers
- LPG Tankers
- Fruit Juice Carriers
- Introduction

- What is Tanker?
- Types of Oil Tankers
- Type of Tanker
- Oil Tankers
- LNG Carrier
- Chemical Tankers
- Slurry Tankers
- Hydrogen Tankers
- Other Type of Tankers
- Combination Carrier
- A Shuttle Tanker
- Floating Production, Storage and Offloading unit (FPSO)
- Very Large Crude Carrier (VLCC)
- Suez Max
- Aframax
- Panamax
- Medium Range Tankers (MR)
- Floating, Storage and Offloading Unit (FSO)
- Jetty
- Pipeline
- Pipeline Transportation
- Pipeline System: Crude Oil Transportation
- Pipeline System: Product Transportation
- Transportation Pipeline Operation
- Petroleum Product Pipeline Information
- Petroleum Product Pipeline Operation
- Gas Transmission
- Natural Gas Pipelines Information
- Advantages of Pipeline Transportation
- How to Evaluate Spot Tanker Freight Costs
- The Cost Structure
- Tanker Customers
- How the Price of Freight is Set
- Price of Oil – Impact on Tankers
- Key Market Drivers – Demand for Oil

- Key Market Drivers – Supply of Oil
- Key Market Drivers – Vessel Supply
- How Tankers are Chartered
- Oil and Natural Gas Logistics
- Highlights
- Oil Logistics
- Natural Gas Logistics
- Potential Developments and Barriers
- Oil Logistics: Performance and Costs
- Open Sea Transport
- Railway and Truck Transport
- Oil Storage
- Liquefied Natural Gas (LNG)
- Liquefaction Plants
- Gas Storage Facilities
- Potential and Barriers
- Risks and Marine Insurance of Oil Tanker
- Risk Assessment Key Questions
- Risk Assessment
- Risk in General
- Sea Perils
- Perils in Sea
- Mixed Perils
- General Info about Insurance
- Marine Insurance
- Cargo Insurance
- Risk Management
- Risk That may Face Tanker
- Insurance in Specific
- Piracy
- Oil Spill
- Conclusion
- How Spot Oil Purchase/Sale Contracts are Structured
- Introduction
- Purchase/Sale Contracts are Structured