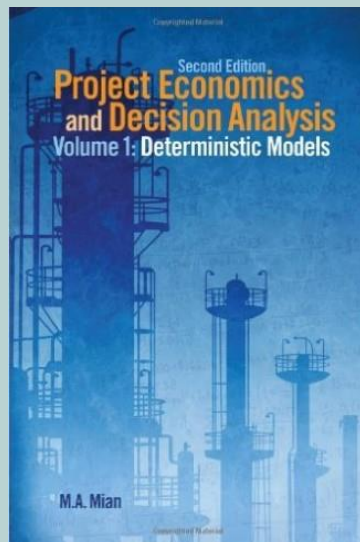


5 Day

Global Oil Economics & Petroleum Project Evaluation

Includes



Course Leaders



M. A. Mian, P.E.



Dr. S. Ghouri


**YOUR PARTNER
FOR SUCCESS IN
OIL AND GAS INDUSTRY**



O&G Knowledge Sharing Platform

Enhancing Return on Investment in Oil & Gas Training

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Move your business in the right direction with the knowledge and training it takes to succeed

This 5-Day course is logically divided into the following three parts.

1. **Part 1** – Global Oil Economics & Corporate Strategic Planning
 - a. Provide extensive exposure to the complex management issues presently confronting the international petroleum economy
 - b. Strengthen your understanding of the business drivers
2. **Part 2** – Petroleum Investment Evaluation & Investment Decision-Making
 - a. Understand the factors that influence the economic evaluation of oil and gas projects
 - b. Appropriate use of profitability indicators to make decisions
 - c. Understand limitations of methods used in evaluation
 - d. Accounting for Uncertainty in Investment Evaluation
3. **Part 3** – Comprehensive Case Study of Field Development Project

What you will learn?

On completion of this course you will be able to fully understand the Investment Evaluation:

- Understand the dynamics of global oil economics
- Be able to understand the management challenges and how to cope with it
- Learn how to reduce exposure and mitigate risks in projects and handling uncertainty
- Clarify concepts such as: time value of money, cash-flow models, capital budgeting, IRR, NPV, income producing investments
- Maximize the return on investments by good decision making processes based on the commercial viability of projects
- Improve your decision process, investment and opportunity analysis
- Practice the hands on experience in building your own economic evaluation models and solving case study based examples

Who will benefit?

The following oil & gas company personnel will benefit from the knowledge shared in this course.

Planning managers | Oil & gas engineers | Project managers | Analysts | Commercial managers | Economists | Government officials | Geologists | Business advisors | Asset managers | E&P managers | Product managers



DRIVERS BEHIND THE BUSINESS

- Oil & gas industry
- Drivers behind the oil & gas business
- Key performance indicators
- Industry streams
- Oil and gas business value chain
- Supply chain strategy
- Simple steps in oil & gas processing

GENERAL INDUSTRY OVERVIEW (TPEC)

- Primary energy consumption by fuel
- Regional TPEC consumption
- Regional TPEC consumption comparison
- Global power generation
- Global renewable energy

GENERAL INDUSTRY OVERVIEW (OIL)

- Global oil reserves at end 2016
- Global oil production
- Global oil production forecast
- Global oil consumption
- Global oil consumption forecast
- Regional oil consumption
- Oil consumption by end use sector

GENERAL INDUSTRY OVERVIEW (GAS)

- Global gas reserves at end 2016
- Global gas production
- Global gas production forecast
- Global gas consumption

GENERAL INDUSTRY OVERVIEW (GAS)

- Global gas consumption forecast
- Regional gas consumption
- Regional gas production
- Natural gas consumption by end use sectors

THE NATURE OF OIL ACCUMULATIONS

- Gas-to-oil-ratio (GOR)
- Condensate-to-gas ratio (CGR)
- Types of accumulations
- Conventional vs. unconventional resources
- Vertical & horizontal wells
- Benefits of horizontal wells

PEAK OIL THEORY

- Peak oil
- Hubert's Peak oil theory
- The Hubbert Curve for USA
- Key factors contradicting peak oil

SHALE OIL IMPLICATIONS

- US shale oil basins
- US shale oil and its implication on global market
- US shale oil profile
- US shale oil production basins
- US crude oil import dependency

OIL INDUSTRY CHALLENGES

- Energy outlooks – same data but different perspectives
- Objective
- World GDP outlook
- World population outlook
- World reserves vs. population
- World reserves outlook
- World oil import outlook
- World oil consumption outlook
- World consumption vs. population
- World oil production outlook
- Middle east production & consumption
- Summary
- Challenges to the Middle East

THE FUTURE OF OIL INDUSTRY

- Will oil demand peak?
- Oil remains the king of energy – no peaks, why?
- Oil demand outlook
- Rationales of peak oil demand

OPEC'S FUTURE ROLE

- OPEC's future role is at risk
- ### INTRODUCTION TO ECONOMIC EVALUATION

- Why economic evaluation
- Objective of this module
- Projects subject to economic evaluation
- Capital expenditure plans
- Basic process of economic evaluation
- Typical workflow

INFLATION & RISK

- Inflation defined
- Types of inflation
- Consumer price index (CPI) - USA
- Italian consumer price index
- Risk factors (simple illustration)

SIMPLE & COMPOUND INTEREST

- Simple and compound interest
- Compound interest formula
- Nominal and effective interest rate

THE TIME VALUE OF MONEY

- The time value of money
- Equivalence
- Interest table
- Future value of present sum
- Present value of future sum
- Future value of ordinary annuity
- Future value of annuity due
- Present value of ordinary annuity
- Conditions for annuity
- Excel's financial functions

DEBT CASH-FLOW CALCULATION

- Project financing
- Loan amortization schedule (constant periodic payment)
- Loan amortization schedule (constant principal payment)
- Loan amortization schedule (interest only payment)
- Interest during construction period
- Excel's financial function (loan amortization)

BEFORE-TAX (BTAX) CASH-FLOW

- Cash-Flow (CF) defined
- Forecasting cash-flow
- Gross revenue
- Basic data requirements



FORECASTING CASH-FLOW VARIABLES

- Forecasting product stream
- Gas project's revenue stream
- NGLs' forecast
- Gas liquids recovery methods
- Dependence of CAPEX
- CAPEX breakdown
- Estimating CAPEX
- Scheduling capital expenditure
- Capital maintenance
- Gas project's capital expenditure
- Economies of scale (scaling rule)
- Estimating number of wells
- CAPEX during production
- Breakdown of OPEX
- Develop rules of thumb for OPEX
- Gas project's operating expenditure
- Typical oil production facilities
- Schematic of typical cash-flow
- LNG cash-flow variables
- Refinery cash-flow variables

COST ESTIMATION

- Project cost management
- Various types of costs
- Levels of cost estimates
- Dependence of cost estimates
- Criticality of cost estimates

AFTER-TAX (ATAX) CASH-FLOW

- Additional variables
- Straight line depreciation
- Double declining balance depreciation
- Declining balance with switch to straight line depreciation
- Sum-of-the years digits depreciation
- Excel's depreciation functions
- Typical after-tax cash-flow
- Gas project's net cash-flow stream

PROBLEMS AND SOLUTIONS

WEIGHTED AVERAGE COST OF CAPITAL

- Capital asset pricing model
- Cost of equity & cost of debt
- Weighted average cost of capital
- Sample WACC calculations
- Relationship between WACC & cash-flow

PROFITABILITY INDICATORS

- Typical profitability indicators
- Cumulative net cash-flow
- Discounted payback period
- Internal rate of return (IRR)
- Net present value (NPV) calculation
- Excel's financial function
- Profitability index (PI)
- Long-range marginal cost (LRMC)
- LRMC of sample cash-flow
- LRMC – test your calculations

NETBACK VALUE & INDEXED PRICING

- Netback value (NBV)
- Netback value example
- Base year and ROR approach
- LRMC approach
- Indexed netback pricing

CASH-FLOW & DISCOUNTING ASSUMPTION

- Funds flow and discounting frequency
- Common cash-flow assumptions
- Use of Excel's NPV function
- Other ways of calculating NPV

INTERNATIONAL PETROLEUM AGREEMENTS

- The need for collaboration
- International agreements
- Parties to upstream agreement
- Typical contract terms
- Contractual arrangements
- Comparison of fiscal systems
- Sliding scale tranches
- Concessionary system's cash-flow
- Production sharing agreement's cash-flow
- PSA sample cash-flow calculation

INVESTMENT SELECTION DECISION MAKING

- Investment types
- Types of investment decisions
- Investment decision-making (screening)
- Investment decision-making (mutually exclusive investments)
- Revenue producing investments (NPV)
- Revenue producing investments (IRR & PI)
- Revenue producing investments – incremental analysis
- NPV/IRR conflict
- Inherent problems with IRR
- Multiple rates of return
- Economic solution for projects with multiple IRR
- Ranking investments (non-mutually exclusive)
- Ranking projects using PI
- Ranking projects using NPV
- Service producing investments using PV of costs
- Service producing investments using annual values
- Service producing investments using IRR
- Service producing investments (unequal life)
- Lease versus buy decision-flow

PROJECT NPV MAXIMIZATION

- Project sensitivity on plateau rate
- Projects showing optimum project NPV

ACCOUNTING FOR UNCERTAINTY

- Why decision analysis
- Typical industry risks
- Handling uncertainty in capital investments
- Spider diagram and tornado chart
- Wide application of decision analysis

COMPREHENSIVE CASE STUDY

- General assumptions
- Production profile/well & gas composition
- Capital expenditure
- Deliverable





M. A. Mian, P.E.

B.Sc Mechanical Engineering
M.Sc Petroleum Engineering
M.Sc Mineral Economics

Mian is a Sr. Petroleum Engineering Consultant with Saudi Aramco in Dhahran, Saudi Arabia. He has previously worked with Qatar Petroleum (Doha, Qatar), ZADCO (Abu Dhabi, UAE), Euratex Corporation (Colorado, USA), Keplinger & Associates (International Energy Consultants in Colorado, USA), and as Independent Consultant in Colorado, USA. He is a registered professional Engineer in the state of Colorado, USA.

Mian has 35 years of diversified experience in petroleum engineering, reservoir engineering, project economics and decision analysis. He had been involved in evaluating multi-billion-dollar oil and gas field development, LNG, GTL, Aluminum smelter, refinery, petrochemical, power and production sharing projects.

Mian is the author of six books:

- Petroleum Engineering Handbook for the Practicing Engineer, Vol. I and Vol. II, PennWell Publishing Co., Tulsa, OK, USA
- Project Economics and Decision Analysis, Vol. I and Vol. II, PennWell Publishing Co., Tulsa, OK, USA.
- Tips & Tricks for Excel Base Financial Modeling, Business Expert Press, New York, USA

He has also authored several papers in the Oil & Gas Journal, The Log Analyst, World Oil, SPE Journals, and Oil & Gas Financial Journal.

Mian is one of the pioneers in working with unconventional gas resources. He has extensively dealt with reserves evaluation of tight gas and coalbed methane. Currently he is involved in applying his experience to shale gas resources. He has also served as an expert witness in US Federal court and Energy Commission hearings regarding tight gas pricing classification in the US.

He has delivered lectures in more than 25 countries around the globe. He has always received excellent feedback, as an expert presenter, from the participants of his courses.

PUBLICATIONS

- Unnecessary and Avoidable Mistakes in Financial Calculations
- Comparison of Methods used to Calculate Netback Value
- Revisiting the Pitfalls and Misuse of WACC
- Custom Graphs Help Analyze Oil, Gas Operations
- Spreadsheet Programming Simplifies Drilling Calculations
- Program Quickly Solves Trial-and-Error Problems
- Creating Quality, Cost Effective Property Reports
- Predicting the Performance of Tight Gas Reservoirs

COURSES DELIVERED IN

United Kingdom, Italy, Czech Republic, Norway, Sydney, Perth, Adelaide, Brisbane, New Zealand, Singapore, Malaysia, Hong Kong, Pakistan, South Korea, Kazakhstan, UAE, Kuwait, Qatar, Saudi Arabia, Bahrain, Bolivia, Brazil, Canada, Angola, Nigeria, Ghana, Mozambique, Algeria & South Africa.

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Dr. S. Ghouri

M.A. Economics
M.Sc Mineral Economics
Ph.D Mineral Economics

Dr. Ghouri, with more than 35 years of experience, is a Sr. Performance Analyst with Qatar Petroleum, Doha, Qatar. He has previously worked with Oil and Gas Development Company (OGDCL), a national oil company of Pakistan as a senior advisor to various Chairmen, senior instructor in banking industry to train managers as how to evaluate feasibilities submitted to them for loan approval, manager marketing, Chief economist, researcher at Karachi University Applied Economics Research Center (AERC), teaching/research assistant at University of Waterloo, Canada/Colorado School of Mines, USA, independent consultant to advise various clients pertaining to oil and gas companies, bankers, and independent consultant and advice various clients on market assessment, specific projects and short/long term oil and gas price forecast.

He had been involved in evaluating multi-million-dollar oil and gas field development, participate in import of Turkmenistan-Pakistan pipeline in 1992, gas project, economic/risk assessment of exploratory, development and full field development. He was involved in formulation of Pakistan's 1994 Petroleum Policy, formulated OGDCL LPG and Sulphur sale strategy, participate in oil/gas sale purchase agreement. He also carried over 50 comprehensive studies pertaining to assessment of Tariff Reforms for Qatar KARAAMA, Qatar's long-term GDP Outlook, Qatar's long-term Petroleum Products Outlook, European Energy Outlook, Europe Security of Supplies and Role of LNG etc.

He has published over 90 papers in international journals, such as: American Economist, Energy Policy, LNG Journal, European Energy Review, Energy Review, Economic Review, OPEC Review, International Energy Investments, MEES, MEEDs, Petromin, Hydrocarbon Asia, The Daily Journalists, Oil Price Volatility: Speculation or Market Fundamentals?" Middle East Institute Viewpoints: Viewpoints Special Edition The 1979 "Oil Shock:" Legacy, Lessons, and Lasting Reverberations. He also wrote chapter for Emirates Center for Energy & Strategy Research (ECSSR) and International symposium, the Indus River Biodiversity, Resources, Humankind, Linnean Society Burlington House, London, published by Oxford University Press. He has invited to speak at World Energy Council (WEC), World Petroleum Congress (WPC), OPEC/IEA, International Center for Energy and Economic Development (ICEED), ECSSR, GasArabia, SPE, IPTC, Middle East Petroleum & Gas Conference etc.

PUBLICATIONS

- Cyclical Oil Prices - Is it a Necessary Condition to Balance Global Oil Supply/Demand?
- Defending Market Share: A Dilemma for OPEC or for the Shale Oil?
- OPEC strategic miscalculation-created-its-own-worst-enemy"
- Peak Oil and Technology - The Never-Ending Game
- Plunging Oil Prices - US Tight Oil Boom or the Burst
- Aftermath of US Shale Gas - Oil index or Decoupling
- The US unconventional oil revolution: are we at the beginning of a new era for US oil
- Does LNG Industry need a new strategy for changing LNG market dynamics?
- Oil Price Volatility: Speculation or Market Fundamentals?"
- Forecasting Natural Gas Prices using Cointegration Technique
- How most recent events alters expectations - A case of oil price forecasting

COURSES DELIVERED IN

Italy, Calgary, Nigeria, Dubai, Pakistan

Global Oil Economics & Petroleum Project Evaluation

Please complete the following Form and e-mail it to mianma@OGKnowledgeShare.com OR Submit the same details via the **Event Registration** on the website www.OGKnowledgeShare.com. We will then send you additional course details along with a detailed course registration Form.

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COURSE FEES & VENUE

Middle East – US\$ 3,500

All Other Locations – US\$ 3,950

Hotel accommodation and travel costs are not included in the fees. The Fees includes refreshments, lunch and course material. Course is held preferably in a 5-star hotel. The final venue selection will depend upon the number of delegates attending the course and availability of the venue. All delegates will be informed about the venue two weeks before the course start date.

Full payment is due within 14 days from date of invoice and before the course commences. Delegates will not be allowed entry to the course if any payments are outstanding. A confirmation letter and invoice will be sent to you on receipt of your booking.

You may substitute delegates at any time as long as reasonable advance notice is given to O&G Knowledge Sharing Platform. For any cancellation received in writing not less than twenty (20) working days prior to the date of the training course, you will receive a full refund less US\$ 150 administration fee and any related bank or credit card charges.

Delegates who cancel the registration less than twenty (20) working days of the date of training course, or who do not attend the course, are liable to pay the full course fee and no refunds will be granted.

In the event that KSP cancels or postpones the course for any reason, the delegates will be given choice to (a) request full refund less applicable credit card or bank charges, (b) attend the same course at the rescheduled date at the same or other venue or (c) receive credit note to be used by any employee of the same company for any other course offered by KSP, which must occur within one year from the date of postponement.

COMPANY GAURANTEEE

If Company Payment is selected as the Billing Method, an official letter from the company, signed by HR or responsible Management, stating names of the delegates who will attend the course and the total course fee payment guaranteed by the company to be paid within 30 days upon receipt of invoice from KSP shall be submitted ten (10) working days before the start date of the course.

CHARGES AND FEES

1. For Payment by Direct Telegraphic Transfer, client has to bear both local and oversea bank charges.
2. For credit card payment, there is additional 4% credit card processing fee, which shall be added to the course fee.