O&G Knowledge Sharing Platform

Enhancing Return on Investment in Oil & Gas Training

5 Day

Project Economics, Risk & Decision Analysis

Instructor(s)

M. A. Mian

Dr. Ghouri

Gain in-depth knowledge of project economics analysis and decision-making.

This 5-Day course covers the setup of economic analysis cases, including the estimation of recoverable reserves, production profiles, commodity prices, and project costs – CAPEX, OPEX, taxes, royalties, transportation, depreciation, before-tax (BTAX) cash-flow, after-tax (ATAX) cash-flow, international fiscal regimes (production sharing agreement and concessionary system). The course starts from the basic required parameters of inflation, interest and time value of money. These concepts are then transformed into profitability indicators. Last but not the least, the profitability indicators are then used to make investment decisions.

Emphasis of the course is to bridge the gap between theoretical concepts and their practical limitations. The participants will be able to appreciate the amount of information that they never thought of. In addition to this, emphasis is also on the use of Excel's financial functions. This understanding is very critical when it comes to building economic cash-flow models. Over the years we have seen that participants really struggle with using the Excel functions correctly and this leads to mistakes that can be easily avoided.

Multiple choice problems are solved each day to reinforce the understanding of the concepts covered that day. Many tricks, not widely known, are shared with the participants. The concepts covered in this course are not restricted to downstream, upstream or petrochemical projects. These concepts can be used to evaluate any type of investment under consideration.

On Day 5, a comprehensive case study is performed by participants to be able to understand how the process takes place from scratch. Emphasis will be on the way the results are presented to management for project/investment approval.

What will this course cover ?

The basic objective of this course is to improve your risk and investment analysis by reinforcing your financial modelling techniques, investment evaluation and knowledge of project economics. The course will cover the basic economic evaluation concepts and their application in practice. On completion of this course you will receive a complimentary copy of the course leader's published book, *"Project Economics and Decision Analysis, Vol 1, 2nd Edition, 2011."*

What will you learn?

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

- 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

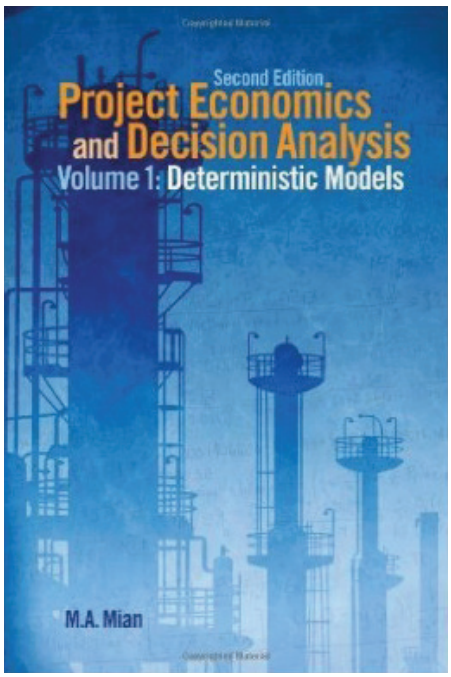
The following oil & gas company personnel will benefit from the knowledge shared in this course.

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

COURSE MATERIAL

The course material includes hard copy of some 300 slides and copy of the course Leaders' book **"Project Economics and Decision Analysis – Deterministic Models, Vol. 1, 2nd Edition, 2011."**

Each delegate will also receive a USB. The USB includes soft copies of the slides, decision trees, Monte Carlo Simulation models and economics models for oil and gas field development, LNG, Refinery and Power Plant.



ABOUT YOUR COURSE LEADER

M. A. Mian, P.E.

B.Sc. in Mechanical Engineering
M.Sc. in Petroleum Engineering
M.Sc. in 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 four books "Petroleum Engineering Handbook for the Practicing Engineer, Vol. I and Vol. II" and the best seller "Project Economics and Decision Analysis, Vol. I and Vol. II," published by PennWell Books, Tulsa, Oklahoma, USA. He has also authored several papers in the Oil & Gas Journal, The Log Analyst, World Oil, SPE Journals, and Oil & Gas Financial Journal. He is also the author of three software packages (PEPAC, PEPAC2 and PEPAC3) for petroleum engineers, available from Gulf Publishing Company in USA.

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.

COURSES DELIVERED IN

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

Day 1

Pre Course Assessment Introduction
- Why economic evaluation
- Objective of the course
- Typical oil & gas company objectives
- Typical oil & gas company activities
- Capital expenditure plans
- Basic process of economic evaluation

Inflation
- Inflation defined
- Types of inflation
- Consumer price index
- Risk Factors (Simple Illustration)

Interest
- Simple interest
- Compound interest formula
- Nominal & effective interest rate

The Time Value of Money
- Equivalence
- Interest tables
- Future value of present sum
- Present value of future sum
- Future value of ordinary annuity and annuity due
- Present value of ordinary annuity and annuity due
- Project financing
- Loan amortization schedule

Spreadsheet Applications
- Excel's financial functions for equivalence
- Excel's financial functions for loan amortization

Problems & Solutions

Day 2

Before-Tax (BTAX) Cash-Flow
- Cash-flow (CF) defined
- Gross revenue (GR)
- Basic data requirement
- Forecasting product stream
- Dependence of Capital Expenditure (CAPEX)
- Economies of scale
- CAPEX during production
- Breakdown of Operating Expenditure (OPEX)
- Develop rules of thumb for OPEX
- Gas processing flow diagram
- Typical oil production facilities
- Sample before-tax cash-flow
- Schematic of typical cash-flow

Cost Estimation
- Project cost management
- Various types of costs
- Cost estimation tools and techniques
- Level of cost estimates
- Dependence of cost estimates
- Criticality of cost estimates.

After-Tax (ATAX) Cash-Flow
- ATAX cash-flow additional variables
- Depreciation methods
- Sample After-Tax Cash-Flow

Weighted Average Cost of Capital
- Capital Asset Pricing model (CAPM)
- Cost of equity and cost of debt
- Weighted average cost of capital
- Sample WACC calculations

Problems and Solutions

Day 3

Relationship between cash-flow and WACC

Profitability indicators
- 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 and ROR approach
- LRMC approach
- Indexed netback pricing

Funds Flow and Discounting Frequency
- Funds flow and discounting
- NPV dependence on CF assumptions
- Discounting methods

International Petroleum Agreements
- The need for collaboration
- International agreements
- Parties to agreement
- Typical contract terms
- Contractual arrangements
- Comparison of Fiscal Systems
- Sliding scale tranches
- Concessionary system's cash-flow
- Joint venture & risk service contracts

Problems and Solutions

Day 4

International Agreements (Case Study)

Investment Selection Decision-Making
- Investment types
- Types of investment decisions
- Investment selection decision-making
- Revenue producing investments
- Inherent problems with IRR
- Multiple rates of return
- Ranking projects – non-mutually exclusive investments
- Service producing investments (equal lives)
- Service producing investments (unequal lives)
- Lease versus buy decision
- Nominal and real cash-flow

Basic Probability Concepts
- Probability definitions
- Widely used probability distributions
- Discrete probability distributions
- Discrete probability distributions
- Continuous probability distributions

Problems & Solutions

Day 5

Expected Value Concepts
- Expected value of random variables
- Probability table
- Expected monetary value (EMV)
- Sensitivity analysis
- Correct interpretation of expected value
- Dice rolling experiment Schematic of typical cash-flow

Decision Trees
- Terminology used in decision trees
- Solving a decision tree

Simulation in Decision Analysis
- Applications in simulation
- Simulation in decision-making
- Obtaining random observation from PDF.

Management Presentation
- Assumptions
- Profitability indicators
- Sensitivity diagrams
- Waterfall chart
- Multiple variable cross plot
- Feasible profitability region

Detailed Case Study

Post Course Assessment

Case Study	Objectives	Tool Used	Project
1	Use the concepts learned to show how project economics are typically conducted. The participants (individually or in groups) evaluate different options, carry sensitivity analysis and build multi-variable cross-plots for management presentation.	Excel Model	Gas Field Development with and without NGL Recovery
2	Apply the concepts learned to economics of downstream projects.	Excel Model	Refinery or LNG Cost elements and refinery configurations

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.

Course Name			
Course Venue		Course Date	
Company			
First Name		Last Name	
Title			
Email		Phone	
Address			
City		State	
Postal Code		Country	

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ACCREDITATION

The course is accredited by The CPD Standards Office (UK). Each delegate will receive a successful course completion certificate and applicable (30 hours) Professional Development Units (PDUs) for this course.

CHARGES AND FEES

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

COURSE FEES AND 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 GUARANTEE

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 O&G Knowledge Sharing Platform shall be submitted ten (10) working days before the start date of the course.