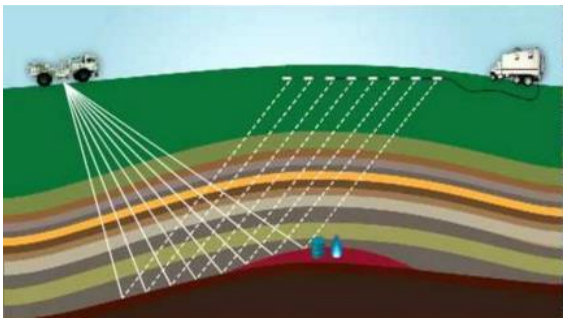
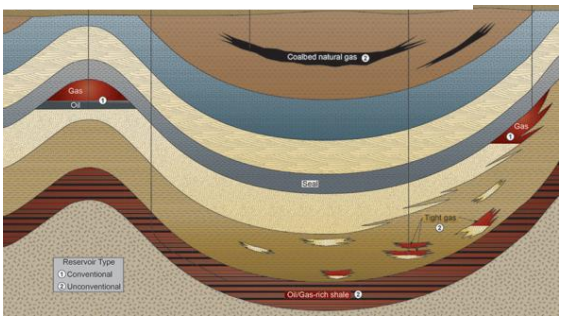
O&G Knowledge Sharing Platform

Enhancing Return on Investment in Oil & Gas Training





2016 Featured Course Catalog

www.OGKnowledgeShare.com

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Introduction

O&G Knowledge Sharing Platform is introducing new concepts in training Oil & Gas Industry personnel. The companies will now be able to spend **50%** of their previous years' training budget and train the same number of personnel without jeopardizing quality. We are achieving these savings for your organization by coming directly to you and eliminating the intermediaries (training companies). We will be offering both (1) open public courses and (2) in-house courses at the clients' premises.

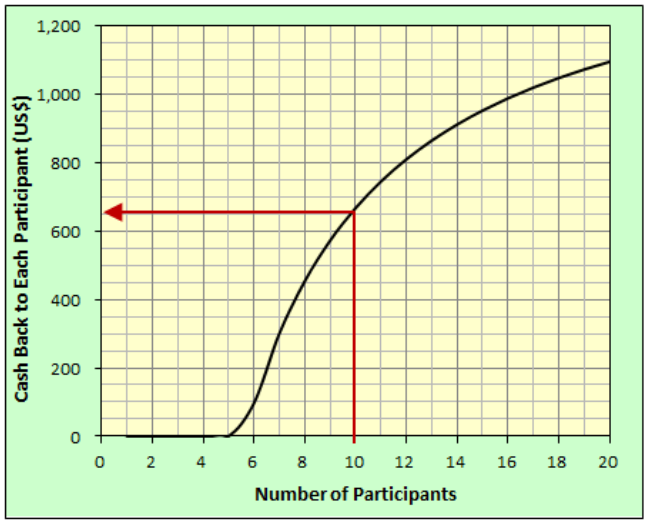
In this catalog we provide the courses (with detailed description, outline and advantages) we currently offer to our clients. The courses have been carefully designed by the expert faculty of **O&G Knowledge Sharing Platform**. Our aim is to enhance return on you training investment. Each one of the faculty member has more than 35 years of practical experience and through their courses they share their immense knowledge with the participants.

The Consortium provides enjoyable, creative learning through a range of formats that enable participants to rapidly develop their skills and knowledge. Our clients have the luxury of:

- Selecting from the courses in this catalog,
- Ask us to alter the contents (mix and match from other courses) to meet your specific learning goals and outcomes, or
- Design a tailor made course to fit your organization's specific training requirements. We can design and deliver these tailored courses at your selected venues as and when convenient to you.

Choose any course from our comprehensive program portfolio and have it delivered anytime and anywhere. If you do not have enough participants to request for an in-house course, we will be offering these courses as open public courses in very near future.

For the open courses, we are introducing a **Profit Sharing** concept, again to help our clients to maximize return on their training budget. According to this concept the course fees will not be fixed instead it will be adjusted lower as we get more and more participants in a course.



The figure on the side shows how this concept works. This graph is for a 5-Day course in Dubai (UAE) with initial course fees of US$ 3,500 per participant. This fee remains same until our breakeven point (6 participants in this case). After the breakeven point, 50% of the course fee (for incremental participants) is shared equally between all participants as a cashback. In short, if we have 10 participants in the course, every participant pays US$ 2,850 for this 5-Day course instead of the US$ 3,500 initially advertised. The cashback amount will depend upon the course venue and timing of the course. However, our participants will know in advance (as soon as the course and venue are confirmed) how the above figure will look like for each course.

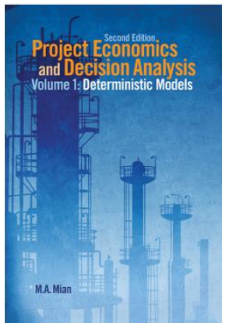
The cashback could be issued as (a) a credit voucher to the organizations that they can use in future for sending delegates to other courses or (b) cash transferred to their specified bank account.

Economics & Management

5 Day

Project Economics, Risk & Decision Analysis

Instructor(s): M. A. Mian, Dr. S. Ghauri or Jenny Spalding



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?	Who will benefit
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	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

DAY 1	DAY 2	DAY 3
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**	**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**	**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 Assumptions** • 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	DAY 5
International Agreements **Economic Assessment of International Contracts** **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 **Detailed Case Study**	**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

5 Day

International Gas Markets & Economic Evaluation of Gas Projects

Instructor(s): M. A. Mian, Dr. S. Ghauri or Jenny Spalding

Gain in-depth knowledge of gas market and economic evaluation of gas projects.

This 5-Day course covers the dynamics of the gas industry. The gas market section provides general industry overview, nature of natural gas, the global market place, estimating gas reserves, petroleum resources management system, development and economics of shale gas and impact of shale gas on LNG market.

The second part provides setup of economic analysis cases, including the estimation commodity prices, 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. In addition to this, emphasis is also on the use of Excel's financial functions. This understanding is very critical when it comes to boiling economic cash-flow models.

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.

What will this course cover?

The basic objective of this course is to provide overall dynamics of the gas market/industry and 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 I, 2nd Edition, 2011."

What will you learn?	Who will benefit
On completion of this course you will be able to fully understand the Investment Evaluation: • Understand the dynamics of gas market, monetization of shale gas and impact of shale gas on LNG imports • 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	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

DAY 1		DAY 2
General Industry Overview • Drivers behind the business (KPIs) • Oil & Gas industry • Workforce diversity • Typical oil and gas company objectives • Typical oil and gas company activities • Industry streams • Petroleum utilization • Global energy mix **The Nature of Natural Gas** • Meaning of petroleum • Types of accumulations • Gas-to-oil ration (GOR) • Condensate-to-gas ration (CGR) • Natural gas properties • Typical natural gas composition • Properties of pure gases • Natural gas processing • Gas added value products • Barrel of oil equivalent (BOE) • British thermal unit • The gas resource triangle • Conventional versus unconventional resources **The Global Market Place** • Natural gas proved reserves • Global natural gas profile • Regional natural gas production • Regional natural gas consumption • Key Asian gas consumers • Natural gas trade movements by pipelines - 2015 • Natural gas and crude price relationship • Decoupling permanently or temporary phase	**Estimating Gas Reserves** • Reserves estimating methods • Reserves classification • Oil and gas estimates • Volumetric calculations • Decline curve analysis (DCA) • Exponential decline • Hyperbolic decline • P/Z-Cumulative gas production curve • Economic limit • Reserves replacement ratio **Petroleum Resources Management System (PRMS)** **Development & Economics of Shale Gas** **Shale Gas Development** **Impact of Shale Gas on LNG Market** **Shale Gas Development Costs & Economics** • Typical shale gas production • Number of wells required to maintain a certain plateau • Typical well costs • Well cost versus depth • Some rules of thumb • Comparison of risk • Breakeven gas price for US shale plays • Typical shale gas recoveries **Evaluation of New UG Plays** • Inventory assessment • Frame the opportunities • Assess the resources potential • Exit strategy **Problems & Solutions**	**Introduction** • Why economic evaluation • Objective of the course • Typical oil & gas company objectives • Typical oil & gas company activities • Capital expenditure plans • Basic process **Inflation** • Types of inflation • Consumer price index (CPI) – USA • Italian consumer price index **Interest** • Simple and compound interest • Nominal and effective interest. **The Time Value of Money** • Risk factors (simple illustration) • The time value of money • 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 of annuity **Spreadsheet Applications** **Problems & Solutions**

DAY 3	DAY 4	DAY 5
Before-Tax (BTAX) Cash-Flow • Cash-Flow (CF) defined • Forecasting cash-flow • Brainstorm session - identifications • Basic data requirements • Forecasting product stream • Revenue stream components • Cost elements • Before-tax net cash-flows • Natural gas processing • Typical oil production facilities • The history of oil price • Capital (front end) costs • Breakdown of facilities' cost • Economies of scale • Capital costs during production • Breakdown of OPEX • Develop rules of thumb • Transfer pricing • Types of cost estimates • Dependence of cost estimates • Gross revenue • Sample before-tax cash-flow • Schematic of typical cash-flow **After-Tax (ATAX) Cash-Flow** • After-Tax - additional variables • Depreciation types • Straight line depreciation • Declining balance depreciation • Declining balance with switch to straight line • Sum-of-the years digits depreciation • Depreciable asset lives • Sample after-tax cash-flow • Spreadsheet applications **Problems and Solutions**	**Capital Budgeting Techniques** • Decision yardsticks/profitability indicators • Payback period • Discounted payback period • Net present value calculation • Misuse of NPV • Internal rate of return (IRR) • Limitations of IRR • Multiple rates of return • Economic solution for projects with multiple IRR • Profitability index (PI) • Unit technical cost (UTC) • Long-run marginal cost of gas **Cash-Flow Discounting Frequency** • Funds flow and discounting frequency • Common cash-flow & discounting frequency • Spreadsheet functions Discrete probability distributions **Cost of Capital and Cash-Flow** • Cost of capital relationship • Defining cash-flows • Equity cash-flow (ECF) • Free cash-flow (FCF) • Capital cash-flow (CCF) • Combining cash-flow and WACC **Netback Value & Pricing** • Netback value (NBV) • Base year and ROR approach • LRMC approach • Indexed netback pricing • Sample gas netback from LNG **Problems & Solutions**	**International Petroleum Economics** • Global energy consumption • Why collaboration • The need for collaboration • Parties to upstream agreement • Typical contract terms • Contractual arrangements • Fiscal systems • Concessionary system's cash-flow • Production sharing system • Dynamic terms of contracts • Main objectives of these contracts **Investment Selection Decision Making** • Types of investment decisions • Investment decision-making (screening) • Investment decision-making • Revenue producing investments (NPV) • Revenue producing investments (IRR & PI) • NPV/IRR conflict • Incremental investment analysis • Ranking investments (non-mutually exclusive) • Ranking investments under budget constraints • Service producing investments • Service producing investments (unequal life) • Lease versus buy decision-flow **Introduction to Decision Analysis** **Detailed Case Study** **Problems & Solutions**

5 Day

Global Oil Economics & Petroleum Project Evaluation

Instructor(s): M. A. Mian, Dr. S. Ghauri or Jenny Spalding

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 indictors to make decisions
    c. Understand limitations of methods used in evaluation
3. **Part 3 – Accounting for Uncertainty in Investment Evaluation**
    a. Understand the application of probability in investment analysis
    b. Use Decision Trees and Monte Carlo Simulation to incorporate uncertainty in economic evaluation.

What will this course cover?

The basic objective of this course is to provide overall dynamics of the global oil economics and 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 I, 2nd Edition, 2011."

What will you learn?	Who will benefit
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	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

DAY 1		DAY 2
General Industry Overview • Drivers behind the business (KPIs) • Oil & gas industry • Typical Oil & Gas Company objectives • Typical Oil & Gas Company activities • Global energy mix **Management Challenges** • Energy outlooks - same data but different perspective • The changing oil & gas industry landscape • World GDP outlook • World population outlook • World reserves vs. population • World reserves outlook • World oil imports outlook • World oil consumption outlook • World oil consumption vs. population • World oil production outlook • Challenges to meet by 2035 **The Global Market Place** • Oil and gas regions • World's oil reserves • World's gas reserves • World's crude oil production • World's gas production • Oil Reserves Life Index • Gas Reserves Life Index **Oil & Gas Accumulations** • Types of accumulations • Conventional vs. unconventional resources • Crude oil properties • Benchmark crudes • Natural gas properties	**Oil & Gas Accumulations (Cont'd)** • Typical natural gas composition • Properties of pure gases • British thermal unit (Btu) • Barrel of oil equivalent (BOE) • The gas resource triangle ratio **Oil & Gas Pricing** • Peak oil theory • Driving factors – contradicting peak oil theory • Organization of Petroleum Exporting Countries (OPEC) • OPEC's mission & members • Historical crude oil price • Historical crude oil price – real vs. nominal • Crude oil price vs. API gravity • Brent – WTI differentials • Why Brent-WTI differentials • Causes of crude oil price volatility • Understanding the crude oil pricing mechanism • Key drivers for oil demand • Key players in oil market • LNG pricing mechanism (Japan, Korea & Taiwan) • Basic terms of LNG Sale • European natural gas formula • S-Curve price formula **Impact of Shale Gas on LNG Market** • Global shale gas resources • Global LNG exporters • Global LNG importers • Gas production & consumption of major LNG importers **Factors Affecting Monetization of UG**	**Economic Evaluation of Oil & Gas** • Objective of Petroleum Project Evaluation • Why economic evaluation • Capital expenditure plans • Basic process of economic evaluation **Inflation** • Types of inflation • Consumer price index (CPI) – USA • Italian consumer price index **Interest** • Simple and compound interest • Nominal and effective interest. **The Time Value of Money** • Risk factors (simple illustration) • Equivalence • The time value of money • 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 of annuity **Project Financing (Debt Cash-Flow)** • 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)

DAY 3	DAY 4	DAY 5
Before-Tax (BTAX) Cash-Flow • Cash-Flow (CF) defined • Forecasting cash-flow • Gross revenue • Brainstorm session - identifications • Basic data requirements • Forecasting product stream • Revenue stream components • Gas processing facility • Typical oil production facility • Capital (front end) costs • Breakdown of facilities' cost • Economies of scale • Capital cost during production • Breakdown of OPEX • Develop rules of thumb • Transfer pricing **Cost Estimation** • Types of cost estimates • Dependence of cost estimates • Gross revenue • Sample before-tax cash-flow • Schematic of typical cash-flow **After-Tax (ATAX) Cash-Flow** • After-Tax - additional variables • Depreciation types • Straight line depreciation • Declining balance depreciation • Declining balance with switch to straight line • Sum-of-the years digits depreciation • Depreciable asset lives • Sample after-tax cash-flow • Spreadsheet applications **Problems and Solutions**	**Capital Budgeting Techniques** • Decision yardsticks/profitability indicators • Cumulative net cash-flow • Discounted payback period • Net present value calculation • Misuse of NPV • Internal rate of return (IRR) • Limitations of IRR • Multiple rates of return • Economic solution for projects with multiple IRR • Profitability index (PI) • Unit technical cost (UTC) • Long-run marginal cost of gas **Netback Value & Indexed Pricing** • Netback value (NBV) • Base year and ROR approach • LRMC approach • Indexed netback pricing • Sample gas netback from LNG **Funds Flow & Discounting Frequency** • Funds flow and discounting frequency • NPV dependence on CF assumptions • Discounting methods **Cost of Capital and Cash-Flow** • Cost of capital relationship • Defining cash-flows • Equity cash-flow (ECF) • Free cash-flow (FCF) • Capital cash-flow (CCF) • Combining cash-flow and WACC **Problems & Solutions**	**International Petroleum Economics** • Global energy consumption • Why collaboration • The need for collaboration • Parties to upstream agreement • Typical contract terms • Contractual arrangements • Comparison of fiscal systems • Concessionary system's cash-flow • Production sharing system • Dynamic terms of contracts • Main objectives of these contracts **Investment Selection Decision Making** • Types of investment decisions • Investment decision-making (screening) • Investment decision-making (mutually exclusive investments) • Revenue producing investments (NPV) • Revenue producing investments (IRR & PI) • NPV/IRR conflict • Incremental investment analysis • Ranking investments (non-mutually exclusive) • Ranking investments under budget constraints • Service producing investments • Service producing investments (unequal life) • Lease versus buy decision-flow **Introduction to Decision Analysis** **Detailed Case Study** **Problems & Solutions**

3 Day

Economics of Production Sharing Agreements (PSA/PSC)

Instructor(s): M. A. Mian, Dr. S. Ghauri or Jenny Spalding

This 3-Day course in Economics of Production Sharing Agreements is an extensive hands-on seminar. The seminar participants will gain familiarity with the general mechanics of the production sharing agreements (PSA/PSC) and be able to fully appreciate the effects of various terms and conditions on the Government Take and Investor's profitability. This hands-on seminar will enable the participants to design the terms of production sharing agreements on their own and be able to defend their approach to higher management and government entities. Excel will be extensively used in order to physically see the impact of various terms and conditions on the government take and investor profitability. The objective of the course is to enable the participants design efficient fiscal systems in order to avoid renegotiation of these long-term contracts. In short, the objective of the course is to:

- Gain full insight into the latest advances in designing production sharing systems
  - What the deals involve
  - Who gets what and how much
  - Expectations of the parties involved
  - The bottom-line
  - How the contract should adjust to marginal discovery and a bonanza
- Appreciate the significance of various terms used in these contracts
- Master the technical and non-technical terms and jargon applicable to the production sharing agreements
- Gain benefits that are direct, immediate and measureable

What will this course cover?

Each day of the course is divided in two parts (a) presenting theoretical concepts and mechanics of the PSA and (b) solving a variety of problems/exercises to reinforce the theoretical concepts. All calculations will be performed using MS Excel.

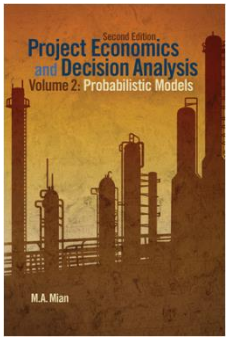
What will you learn?	Who will benefit
On completion of this course you will be able to fully understand the mechanics of production sharing agreements/contracts: • Understand the effect of various factors on the contractor's profitability and host government's take • Be able to appreciate the importance of fiscal terms • The best global practices for PSA/PSC • And finally, be able to craft efficient PSA/PSC • Understand the legal relationship between host governments and companies • solving case study based examples	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, business analysts & business development personnel • Government officials, legal counsels & negotiators • Geologists • Business advisors • Asset managers • E&P managers

DAY 1	DAY 2	DAY 3
Fiscal Regimes/Fiscal Systems • International agreements • Parties to Production Sharing Agreement (PSA) • Ideal fiscal system for government • Ideal fiscal system for contractor • Oil and gas resources ownership • The need for collaboration **Government Participation** • Crafting fiscal terms - what to look for? • Government participation • Key aspects of government participation • Do contractors prefer government participation • Commerciality **Types of Contracts/Agreement** • Contractual arrangements • Main differences between PSA and Royalty/Tax system • PSA cash-flow distribution • PSA numerical example • PSA sample cash-flow • Effect of HG take on contractor economics **Designing Production Sharing Agreements** • Key questions in designing PSA • Efficient PSA? • Protecting the foreign investment • Contract duration and extensions • Minimum work program commitment (MWPC) • Each PSA is unique **Contract Documents** • Upstream project agreement • Other agreements • Relinquishment **Problems/Exercises**	**Forms of Government Take** • Government take • Nature of government take • Bonuses • Signature bonus through bidding • Signature bonus through negotiation • Production bonuses • Examples of production bonuses • Rentals/surface fees • Sliding scale tranches • Royalties • Royalties - two dimensional link • Royalties - other types of sliding scale • S-curves for tax and royalties **Profit Oil (PO) & Cost Oil Splits in PSAs** • Petroleum costs • Fixed profit oil split • Progressive profit oil split • Some examples of profit oil splits • Profit oil splits based on cumulative production • Cost recovery (CR) - two dimensional link • S-curves for CR and PO **Treatment of Various Costs** • Corporate income tax (CIT) • Treatment of bonuses • Operating expenditure (OPEX) • Capital expenditure (CAPEX) • Interest on Loan • Loss carried forward • Loss carried forward limits • Depletion allowance • Uplift or investment credit • Tax credits **Government Participation** • Back-in options • Payments in back-in options • Carried interest **Problems/Exercises**	**Effect of Various Terms on Profitability** • Effect of Various Terms on Profitability • Upfront bonuses and taxes (front end loading index) • Ring fencing • Effect of ring fencing on GT • Effect of uplift on GT • Effect of depreciation on GT • Combined effect of depreciation & uplift on GT • Effect of loss carried forward on GT **Decommissioning** • Decommissioning plan • Decommissioning costs • Ownership and transfer of assets upon termination • Liability and insurance **Economic Assessment of International Contracts** • Effect of GT on contractor's economics • Government take (NCF versus NPV) • Contractor's IRR • Schematic of net cash-flow **Incremental Analysis** • Incremental analysis • Investment scenarios • Gold plating **The Bidding Process** • Financial capability of company • Technical capabilities • Information related to legal aspect of the company • Setting up data rooms • Sealed bids **Bids' Evaluation** **Current Trends in Fiscal Systems** **Problems/Exercises**

5 Day

Advanced Project Economics, Risk & Decision Analysis

Instructor(s): M. A. Mian



This, very intensive, 5-Day course goes beyond the routine deterministic economic evaluation of projects/investments. As the uncertainty in project/investment variables increase so is the need for the application of more sophisticated methods. The expected value analysis and Monte Carlo simulations are becoming popular in almost every industry that is subject to greater uncertainty.

This is a hand-on course in which the participants actually model a variety of problems with decision trees and Monte Carlo simulation. At the end of the course an integrated model is presented, which can be used for upstream economics of full field development.

It is expected that the participants have some basic knowledge of probability and its application. Probability distributions express professional judgments about risks and uncertainties and are carried through the calculations. This is a fast-paced course and emphasis is on practical techniques for immediate application.

What will this course cover?

This course will build on the deterministic economic evaluation techniques by incorporating probabilistic occurrence of the most uncertain variables in the project/investment. We will give a recap of the profitability indicators and their appropriate use. The same concepts will now apply to probabilistic profitability indicators. We will learn how to calculate expected values using Excel and decision trees and Monte Carlo Simulation. We will also cover value of information and it is calculated. On completion of this course you will receive a complimentary copy of the course leader's published book, **"Project Economics and Decision Analysis – Probabilistic Models, Vol 2, 2nd Edition, 2011."**

What will you learn?	Who will benefit
On completion of this course you will be able to fully understand how to perform probabilistic analysis of projects/investments and interpret the result: • Describe the elements of the decision analysis process and the respective roles of management and the analysis team • Be able to understand the continuous probability distributions • Calculated expected values using Excel and Decision Tree • Tailor the existing Excel models to handle Monte Carlo simulation • Build Monte Carlo Simulation model using industry software, run the model and interpret results • Evaluate investment and design alternatives with decision tree analysis • Develop and solve decision trees for value of information (VOI) problems	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, business analysts & business development personnel • Government officials, legal counsels & negotiators • Geologists • Business advisors • Asset managers • E&P managers

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Objective of the Course **Teaching Approach** **Course Outline** **Recap of the Deterministic Concepts** • Why economic evaluation? • Typical profitability indicators • Types of investment decisions • Investment decision-making • Excel's financial functions • Loan amortization – Excel functions • Depreciation – Excel functions • Develop Excel sheet to calculate depreciation **Use of Additional Tools** • Wells calculator • Gas processing flow chart • NGLs calculator **Management Presentation** • Assumptions • Profitability Indicators • Sensitivity analysis • Waterfall chart • Two variable cross plot • Three variable cross plot	**Handling Uncertainty in Investments** • Why decision analysis? • Handling uncertainty in Capital Investments • Tornado chart & spider diagram • Variations in Tornado charts • Generating Tornado chart • Using Excel to generate Tornado chart • Using Excel to generate Tornado chart (Alternative) **Basic Probability Concepts** • Probability definitions • Probability distributions • Continuous probability distributions • Normal probability graph • Lognormal probability graph **Expected Value** • Expected value of random variables • Expected value calculation • Additional Excel functions • Sensitivity analysis • Sensitivity analysis using Excel **Expected Opportunity Loss** • Expected opportunity loss (EOL) • EOL calculations	**LRMC Reconciliation** • LRMC Reconciliation • Steps to follow • Identify differences in assumptions • LRMC reconciliation • Generating waterfall chart **Decision Trees** • Decision tree description • Terminology used in decision tree • Solving a decision tree • Collapsing decision trees • Collapsed decision trees • Characteristics of a decision tree • Guidelines for designing trees • Advantages of decision trees **Risk Profiles** • Risk profile • Risk profiles & specific strategies • Examples of risk profiles • Cumulative risk profiles • Example of cumulative risk profile • Concept of dominance • Stochastic dominance **PrecisionTree™** • Introduction to PrecisionTree	**Value of Imperfect Information** • Expected value of imperfect information (EVII) • Bayes' theorem • Bayesian interpretation • Simple illustration of Bayes' theorem • Using Bayes' theorem • Bayesian revision of probabilities • Decision tree for EVII • Value of Acquiring Seismic **Simulation in Decision Analysis** • What is simulation? • Applications of simulation • Cumulative distribution function (CDF) • Behind the scene calculations • Monte Carlo sampling • Hypercube sampling • Replacing variables by probability distributions • Recognizing dependence between variables • Guidelines for selecting probability distributions • Monte Carlo Simulation • Introduction to @RISK • Useful @RISK functions	**Attitudes Towards Risk** • Expected utility (EU) theory • Risk attitudes • Risk tolerance • Certainty equivalent & Risk premium • Decision-making using CE, EU or RP • Lottery ticket example • Typical utility functions • Solving decision tree using utility function **Determining Venture Participation** • Dependence of participation factor • Gambler's ruin • Exponential risk aversion • Optimum working interest • Portfolio balancing • Portfolio balancing exercise **Multi-Period Investment Optimization** • Multi-period capital budgeting • Using Solver • Multi-period budgeting exercise **Integrated simulation model** **Exploration Economics**

Exercises/Problems
• Gas field development economics
• Develop two variable cross plot
	• Expected profitability index (EPI)
	• EPI sample calculations
	• Risk Index (RI)
	• Mean standard deviation screening method
	• Decision-making
	Problems/Exercises
	• Calculating EV using Excel
	• Calculating EV using Excel (Drill vs Farmout)
	• Sensitivity analysis of dry hole probability using Excel
	• Using Excel to calculate EOL
		• Model settings
		• Decision analysis
		• Sensitivity analysis
		• Decision tree node settings
		Problems/Exercises
		• Drill vs. Farmout Decision Tree
		• Drill vs. Farmout vs. Back-in Decision Tree (collapsed tree)
		• Drill vs. Farmout vs. Back-in Decision Tree (expanded tree)
		• Waterflood Pilot Evaluation
		Value of Perfect Information
		• Value of information (VOI)
		• Categories of information
		• Characteristics of VOI
		• Expected value of perfect information (EVPI)
		  • Using decision tree
		  • Using expected value table
		• Expected Value of Perfect Information Exercise
			• Truncated probability distributions
			• Is Monte Carlo our Best Option?
			Simulation Exercises
			• Fitting probability distribution to historical data
			• Simulation of rolling a dice
			• Simulating oil and gas reserves
			• Simulating oil and gas reserves (Multiple Simulations)
			• Simulation of cash-flow
			• Simulation of cash-flow (using correlation between oil & gas price)
			• Simulating production forecast
			• Simulating production forecast (using correlations)
				• E&P chain of negative consequences
				• 7 Requirements for play analysis
				• 7 Inputs – Prospect vs. Play
				• Shared and local chances
				• Geological chance assessment
				• Probability of commercial success
				• Probability of economic success
				• Calculating Minimum Economic Field Size (MEFS)
				• Program Pe versus dry hole tolerance
				• Exploration success
				• Expected monetary value
				• Complex traps

3 Day

Shale Gas Development & Economics

Instructor(s): M. A. Mian

The shale gas is considered as a “game changer” for the US and global gas markets. Gas production from the shale gas in US has significantly reduced US gas imports in the last five years. The US Energy Information Administration (EIA), US Department of Energy, is forecasting US dependence on imported gas to reduce to 1% by 2035 from the current 11% of the US’s annual gas consumption. The shale gas has become a common discussion topic in the industry as nobody wants to miss the opportunities that are related to the exploitation of gas from these resources. Critical review of the current and future potential of shale gas plays in Poland, China, India, UK, France, Canada, Mexico and US will be given. This 3-day course is specifically designed for those who are inquisitive about shale gas and related prospects applicable to many different disciplines. The course provides a birds’ eye view of the entire shale gas industry, i.e. geology, global prospects, drilling, fracturing, technical challenges in exploiting deeper unconventional resources, cost of development, gas pricing, challenges to the LNG market, opportunities, and so on. Mian (our popular course leader) will share his personal experiences of working with the unconventional reservoirs. Mian has an uncanny knack of presenting difficult technical topics in layman language.

What will this course cover?

The course covers the basic difference between conventional and unconventional oil and gas. The unconventional gas is from tight gas, shale gas and coalbed methane. In these three we will go over the properties of shale gas, factors necessary for the monetization of shale gas, global distribution of technically recoverable shale gas resources, cost of development, production forecast, number of wells required for development and economics.

What will you learn?	Who will benefit
On completion of this course you will be able to fully understand the shale gas resources and what is required to economically develop these resources: • Appreciate the costs involved and the associated risks • Discover the global distribution of the shale gas resources • Enable you to recover your investment in this course multi-fold • Explore what shale gas has to offer you as investor • Gain broader knowledge of the shale gas industry • Identify how your gas industry can capitalize on the learning curve of US's shale gas experience • Know how it has reduced US's dependence on LNG imports • Learn about the technologies that have made the shale gas exploitation possible	The following oil & gas company personnel will benefit from the knowledge shared in this course. • Engineers and geoscientists • Government regulators • Economists and planners • Facilities planning engineers • The C-Level executives • Business development personnel • Finance and legal personnel • Stock traders • Business development personnel

DAY 1	DAY 2	DAY 3

Classification of Natural Gas
• Types of gas accumulations
• Unconventional gas resources
• Classification of natural gas
• Typical composition of natural gas
• Properties of pure gases
• The gas resource triangle
• Gas processing
• British Thermal Unit
Global Gas Resources & Utilization
• Reserves terminology
• Global energy mix
• Global natural gas reserves
• Global natural gas production
• Global natural gas consumption
• Global gas production forecast
• Global gas consumption forecast
• Global gas reserves replacement ratio
• Gas added value products
Definitions - Reserves versus Resources
• Reserves' categories
• Proved reserves versus resources
• Gas forecast - rules of thumb
Unconventional Gas (UG)
• Why is it called unconventional
• Shale gas
• Shale gas versus conventional gas
• Importance of shale gas
• Sedimentary rocks
• Geology of natural gas resources
• Monetizing unconventional gas
• Global shale gas resources
Shale Gas Plays in USA
• Average properties of US shale gas plays
• Shale gas production in USA
• Global unconventional gas
	Shale Gas Development
	• Elements of successful shale gas play
	• Factors influencing UCG monetization
	• Vertical & horizontal wells
	• Benefits of horizontal wells
	• Formation fracturing
	• Hydraulic fracturing (vertical well)
	• Hydraulic fracturing (horizontal well)
	• Fracturing horizontal wells
	• Barnett shale well completions
	• Maximizing reservoir contact
	• Types of fractures
	• Fracturing - data requirement
	• Fracture orientation
	• Drainage area in UCG wells
	• Microseismic technology
	• Microseismic monitoring
	• Microseismic mapping
	• Tilt meter mapping
	• Refracturing & fracture re-orientation
	• Well drainage orientation
	Enablers for UG Development
	• Possible constraints on future gas supply
	• UCG enablers
	• Recognize the paradigm shift
	• Prove concepts
	• Capabilities, knowledge and experience
	UG Development Concerns
	• Challenges
	• Environmental concerns
	• Water pollution
	• Water consumption
	• Regulatory framework
	• Adequate permitting system
	• Challenges to regions other than N. America
	• Environmental non-compliance
		UG Play Selection Strategy
		• UCG selection matrix
		• Go big or go home
		• Assessment template
		• Attributes of explorer
		• Attributes of fast followers
		Evaluation of New UG Plays
		• Inventory assessment
		• Frame the opportunities
		• Assess the resource potential
		Decision Gates - Exit Strategy
		• Decision gates
		• Exploration - confirm play elements
		• Pilot and delineation
		• Evaluating shale gas pilot
		• Unconventional resource assessment
		• Determine appropriate analogs
		• Reservoir evaluation
		• Full field development
		• Resource play decision tree
		Typical Shale Gas Production Behavior
		• Decline curves
		• Typical shale gas production
		• Modified hyperbolic decline
		• Log-log plot of qg/Gp versus t
		• 1/qg versus square root of t
		• Curve shift on log-log graph
		• Effect of cost on LRMC
		• Effect of CGR on LRMC
		Case Study - Barnett Shale
		• Results of Decline Curve Analysis (DCA)
		• 72-well average Barnett Shale production
		• US shale gas drilling forecast
		• Correlations between variables
		• Probability distributions of variables
		  • Initial gas rate
		  • Hyperbolic exponent b

production • US gas production forecast **Shale Gas in other Regions** • Mexico & Canada • China • United Kingdom, France & Poland • Australia	**Impact of Shale Gas on LNG Market** • Typical LNG value chain • Global LNG exporters • Global LNG importers • Gas production & consumption of major LNG importers • Gas consumption (China, India, Japan, S. Korea & UK) **Shale Gas Development Costs** • Typical well costs • Well cost versus depth • Stimulation cost • Economic limit • Long-run marginal cost (LRMC) • Cost optimization • Effect of fracture length on economics • Comparison of risk • Breakeven gas price for US shale gas plays • US shale gas production from each play • Some rules of thumb	• Initial decline rate Di • Estimated ultimate recovery (EUR) • First month's production • First year's production • Variables fitted with probability distributions • Data input for shale gas pilot • UCG pilot example (Monte Carlo Simulation) • UCG full field development (MC Simulation) • Simulated production forecast • Simulated NPV versus EUR • Case study conclusion

3 Day

Shariah Compliant Project Financing in the Oil & Gas Industry

Instructor: Dr. Aly Khorshid

This 3-Day course is designed to show how the Shariah Compliant financing can help the oil and gas industry's financial crunch. Islamic Finance has reached 2 trillion US Dollars in the global market. Islamic banks and Islamic financial institutions are in desperate need for new innovative financial Engineering Shariah compliant products to meet the growing demands for Islamic finance business, and also to compete head to head with conventional financial business.

Post the credit crises; Islamic banks are now faced with unusual liquidity problem due to lack of investment opportunities complying with Shariah. New innovative products such as Commodity Derivatives, Forwards and Futures need to be re-structured to comply with Shariah. Risk management issues must perceive in any structure within Shariah compliant financial engineering. Risk Management and Compliance one of the most important functions that Islamic Banks undertake to protect shareholders as well as stockholders profit and loss, it's also the main requirements by the central bank. This course will inspect all aspects of financial engineering and Risk management particularly Credit risk and all other related risk that Islamic bank's and Islamic Financial institutions have to conform to. Furthermore, this course covers applied and technical Shariah perspective based on its current operating principle within Islamic finance to explore a possible problem solving and good values of new proposition of alternative Islamic deposit structure in accordance with hybrid Shariah principles.

Dr. Khorshid will address the following key Issues in this unique course:

- Can Islamic Finance be used in the Oil and Gas industry?
- Does Islamic Finance Investment offer tools suitable for Oil and Gas project financing?
- Islamic Finance Investment in Oil and Gas Industry, Risk Management and ways to reduce Risks related to investment
- Structuring innovative Islamic Finance investment fund for the Oil and Gas industry with particular reference to Sukuk structure
- Developing Project finance investment fund using Conventional methodology (Western style including borrowing) Vs. Islamic Finance methodology option (Exclude borrowing, Profit & Loss and Risk sharing)
- Shariah Parameters for Significant Product Innovation, and its Contemporary Shariah Issues

What will this course cover?

Each day the course will cover several modules related to Islamic financing and its applicability to the oil and gas industry.

What will you learn?	Who will benefit
On completion of this course you will be able to fully understand the mechanics of Islamic financing: • Shariah Parameters for Significant Product Innovation, and its Contemporary Shariah Issues • Risk management • Financial engineering • Islamic finance tools that are suitable for Oil and Gas industry • Solving pressing Financial engineering issue that may be missed or misused by your organization • Developing effective Risk Managements tools that will enhance your organization performance	The following oil & gas company personnel will benefit from the knowledge shared in this course. • CFOs • Treasurers • Directors • Managers • Auditors • Executives • Consultants and Regulators responsible for Risk Management

DAY 1	DAY 2	DAY 3
Deposit & Investment product engineering based on • Wadiah contract • Mudarabah contract • Wakalah Bil Istishmar contract • Tawarruq contract other hybrid structure **Islamic financing product development based on** • Murabahah (MPO) contract • Tawarruq arrangement • Istisna' / Muqawalah contract • Parallel Salam contract **Islamic financing product development based on** • Financial Ijarah contract • Musharakah contract • Musharakah Mutanaqisah contract • Wakalah project structure issues and its challenges in **Prevalent contemporary and other issues and its challenges in** • Deposit innovation and proposed solutions • Retail financing innovation and proposed solutions • Corporate / commercial innovation and proposed solutions • Micro finance innovation and proposed solutions	**Principals of risk management** • Risk management in conventional financial institutions • Risk Management issue, requirements, and compliance • Risks Management Assessment, Treatment, Avoidance, shifting, reduction, and retention **Conventional Banks vs. Islamic Banks Risks** **Cases from various banks Islamic Banks products AND Risks associated with each product** • Musharakh • Mudarabah • Murabaha • Ijarah • Istisna'a • Salam • Sukuk • Tawaroq **Credit Risk in Banks and how can Islamic Banks reduce Credit Risk?** • Equity investment risk • Market risk • Liquidity risk • Currency risk • Rate of return risk • Operational risk • Compliance risk • Shariah risk and Shariah non-compliance Risk • Legal risk and compliance • Anti-Money Laundering • Basil II, Pillar 1&2 Requirements • Fiduciary risk **Risk sharing issue for Islamic Banks** **Case Study: Remedies of non-Shariah compliant Risk**	**What is financial engineering? Practiced Globally** • The case of UK, France, Germany and USA **Islamic Finance approach to financial engineering** • Islamic theory of Contracts • Prohibitions of Riba, Gharar, Maysir (gambling) • Scope of financial engineering in Islamic Finance **Commodity Derivatives and Islamic finance** • Forward, Future and Option contracts (Conventional vs Islamic) • Hedging, and speculation market within Islamic Contracts • Commodity Murabaha - Commodity (Precious metal, Crude Oil, Coal, natural Gas) market fundamentals **Mutual compensatory contracts permissibility and enforceability** • Arbon • Waad Contracts • Promise contract **General problems with innovation's within Islamic financial engineering** **Innovative Salam Contracts for Oil & Gas Industry** • Rules of Bay al-Salam contract **Case study: Commodity Murabaha approach to Crude Oil unstable prices** **Q&A**

2 Day

Overview of Forecasting Techniques and Applications of EViews

Instructor(s): Dr. Salman Ghauri

Gain in depth knowledge of forecasting theory, fundamentals and techniques that help in generating short and long-term forecasts.

This 2-Day course is structured in such a manner that it provides the basic concepts of forecasting theory, why we forecast, how to build your model to back initially qualitative assessment of historical data, in an effort to understand the relationship between dependent and independent variables. The course is designed to help in understanding the concept of forecasting. Crude oil and natural gas forecasts will be generated in the class.

What will this course cover?

The basic objective of this short course is improve and train the professionals to carryout in-house long-term oil and gas price forecast that is used as key input in carrying out economic evaluation of oil and gas projects, preparation of corporate business plan and forecast budget prices for preparing annual budget. It also facilitates sales professionals to forecast their products' sales/revenues forecast.

What will you learn?	Who will benefit
On completion of this course you will be able to understand the basic theory and forecasting techniques. • Learn the basic theory of forecasting • Qualitative assessment of historical trends • Identification of key parameters • Data collection and feeding in EViews • Formulation of models • How to use EViews techniques • Running of econometric models • Analyzing and interpretation of the estimated results • Selection of best model and re-running to forecast.	The following oil, gas or any other businesses professional will benefit from the knowledge and techniques shared in this course. • Planning managers • Oil & Gas engineers • Project managers • Commercial managers • Economists • Analysts • Sales professionals • Finance • Government agencies • Utility companies professionals

DAY 1	DAY 2

Basic Theory & Concepts of Forecasting:
• Historical trends
• Forecast vs Predication
• Forecast turns out to be wrong
Forecasting Fundamentals
• Why do we forecast?
Major Steps in Forecasting
 	
Forecasting Techniques
• Linear Trend
• Exponential Trend
• First Order Autoregressive
• 2nd Order Autoregressive
• Koyck Model
• Random Walk
 	
Some Basic Examples
 	
Identification of Key Drivers - Brainstorm
• Qualitative analysis
• Theoretical background
• Developing econometric models
• Feeding the data
• Running and analysis of estimated results
• Re-run the model to forecast
• Draw a comparison with other international agencies/consultants forecasts
Case Studies
• Construction of Simple US Crude Oil Demand Model (Case Study)
• GDP forecast - Case study
• Oil price forecast - Case Study
  • Construction of long-term oil price forecast model
  • Scenario Analysis
  • Comparison with other International Agencies/ Forecast
• Natural gas price forecast - Case Study
  • Natural gas price forecast
  • Natural gas prices in various markets - historical trends
  • Henry Hub (HH USA)
  • National Balancing Point (NBK UK)
  • Natural gas prices in Asia
	Forecasting techniques and use of EViews Applications
	• Use of EViews - Statistical software (A brief Overview)
	• How to create new work file
	  • Frequency - annual, semi-annual, quarterly, monthly, weekly
	  • Start date
	  • End date
	• Object - New Object
	  • Selection of data series name - short & precise
	  • Generate all the required data series name in your model
	• How to input data series
	• Importing data from Excel
	  • Data series as to be vertical - descending order in your data source - Excel
	  • In EViews select the data series for which data to be imported.
	• Quick/Generate data series
	  • Transform your data series as required. For example you need to transform your data series in log form use this command - GDP in log form - LGDP=log(GDP)
	• Running Model
	  • Selection of Model
	  • Simple Static Model
	  • Linear Trend
	• Exponential Trend
	  • First Order Autoregressive
	  • 2nd Order Autoregressive
	• Koyck Model
	• Random Walk
	• Lag Structure
	• Polynomial Distributed Lag Model
	• Running Regression
	• Forecasting
	• A number of examples/case studies

• Relationship with crude oil prices • Is this relationship continues? • How unconventional gas and new LNG supplies affect this relationship? • Lessons learnt from history - element of uncertainty	

3 Day

Critical Negotiation Skills

Instructor(s): Dr. Emmanouil Ion

This 3-Day course in Negotiation is an extensive mind-provoking seminar. The seminar participants will gain familiarity with negotiation and be able to fully appreciate pre – negotiation preparation, the principled negotiation process, leadership and negotiation management in the bargaining table, how to overcome cultural barriers, how to monitor and assess their BATNA (Best Alternative to a Negotiated Agreement) and the BATNA of their counterparty, and how to close with a Win – Win result for all. Selected videos will be extensively used to facilitate participants observe, process and analyze the strengths, the weaknesses and the impact of various negotiation strategies and methodologies applied in simulated scenarios.

What will this course cover?

The objective of the course is to (a) enable participants to draft their own customized manual of Negotiation best practices and to facilitate them to make the difference in delivering Win – Win results at the workplace, (b) set out a conceptual framework for outlining the negotiation success, (c) grasp the Negotiation Challenges and (d) assemble all the components and negotiate more effectively and successfully

What will you learn?	Who will benefit
On completion of this course you will be able to understand clearly: • Getting to Yes • Method of Principles Negotiation • Problem sharing • Avoid becoming adversarial • Assess & align BATNAs • Evaluate interests & options at stake • Lead effectively by following standards • Manage Your Negotiation Training • The guide to full engagement • Manage strategic forces • Identify Your “Good” Negotiation Coach • Drive negotiation through different cultures • Master cultural intelligence • Bridge cultural gaps	The following personnel will benefit from the knowledge and best practices shared in this course: • Project managers • Commercial managers • Product managers • Business advisors • Specialist consultants • Contracting managers • Procurement managers • Attorneys • Diplomats • Merger & Acquisition managers • Asset managers • Arbitrators • Senior Management Executives

DAY 1	DAY 2	DAY 3
Classification of Natural Gas • Preparation for all aspects • Styles, techniques and skills of a Good Negotiator • Video 1: Bad examples - Why? • Video 2: Getting to Yes - How? • Data Mapping Domain **Negotiation** • Ury's Method of Principled Negotiation • Video 3: The Key: Problem Sharing, Not Adversarial • Video 4: Interests • Video 5: Options • Video 6: Standards • Group Exercise: Draft Your Manual of Best Practices for Win - Win Negotiation **BATNA** • What is BATNA? • Assessing Your BATNA • Alternatives • Evaluation of alternatives • Setting out Your reservation value • BATNA v. the current "deal" • The other party's BATNA • How to anticipate and assess your analysis • BATNA alignment • Leading bilateral and multilateral negotiations	**Negotiation & Leadership** • Negotiation through different cultures • Stereotypes do come with surprises – Why? • Cultural intelligence • What if the goal is to deliver a long-term agreement? • Asset ownership: the key driver of irrational bargaining • How to do your research • Showing respect for cultural differences: A powerful tool • Think of how other perceive your style, Not how you perceive it • Bridging cultural gaps • Dignity cultures • Face cultures • Honor cultures • Is the bargaining table a “family” table? • How to use “Apology” as an effective tool and When • The Goal: to reseat in the table with dignity and respect **Revision & Group Exercise** • Revision of BATNA • **Group Exercise:** Restructuring Your Manual of Best Practices for Win – Win results for all	**The Four Pillars** **Pillar 1** • How to manage Your Negotiation Training • You will make mistakes: Everybody does – but you can minimize errors • The key: Do not repeat mistakes – learn from them • How to become proactive • Taking an informed decision: Practice Your new skills **Pillar 2** • Full engagement • Understanding the added value of simulations • How simulations work • Four obstacles to learning • Resistance to learning • Misunderstanding the big picture • Absorbing new contexts • Fear of losing **Pillar 3** • Management of strategic forces • Promote & enhance strategic alternatives • Competitive strengths and weaknesses • Re-evaluation of measures of success • Internal forces: Identify and manage them • Preparation process from within Your organization • Principal – Agent dynamics • Budgeting of Your Organization **Pillar 4** • How to identify Your “Good” Negotiation Coach • Why a “Good” Negotiation Coach is needed? • What are the qualitative characteristics of a “Good” Negotiation Coach? **Q&A Session**

Reservoir Engineering

3 Day

Decline Curve Analysis & Diagnostic Methods for Performance Forecasting

Instructor(s): M. A. Mian

This 3-Day course is developed to address three main issues. It is designed to show the different forecasting tools used to forecast oil and gas reserves. Accurate forecast is mandatory for production operations, facilities design, well design and configuration and economic evaluation of oil and gas investments. The course involves extensive problem sessions in which the participants gain hands-on experience with forecasting real life production data using various methods. The limitations of the methods are presented to make sure that the participants pick the correct method to use in their respective situation. Time is also dedicated to generating probabilistic production forecasts (P10, P50 & P90) and building Excel models to forecast production.

The course also shows tools that can be used to diagnose reservoir problems. Well test analysis results are typically used to identify any reservoir anomalies such as faults, distance to fault, dual porosity system, wellbore storage and so on. Performance forecasting methods such as PI, IPR are also used.

What will this course cover?

Decline curve analysis in conventional and unconventional reservoirs. How decline curves and well test data can be used to diagnose reservoir anomalies. How we predict the performance of the reservoirs.

What will you learn?	Who will benefit
On completion of this course you will be able to fully understand the following: • Why performance forecasting • What Forecasting Techniques are Used • Provide in-depth use of forecasting tools • Limitation of these forecasting tools • Forecasting methods of special interest in unconventional reservoirs • Pressure/pressure derivative diagnostic plots • Water control diagnostic plots • Reserves definitions • Requirements for reserves by U.S. SEC regulations • Criteria for SEC reserves categories	The following oil & gas company personnel will benefit from the knowledge shared in this course. • Reservoir Engineers • Production engineers • Petrophysists • Geoscientists • Economists and planners • Facilities planning engineers • Bankers & Stock Brokers • Legal personnel • Mid-level management

DAY 1	DAY 2	DAY 3
The Global Energy Marketplace • Oil and gas regions • World's oil reserves situation • World's gas reserves situation • World's crude oil production • World's gas production • Global energy mix • Global crude oil consumption • Global natural gas consumption • Middle east oil consumption • Key performance indicators (KPIs) • Reserves replacement ratio • Global oil reserves life index • Global gas reserves life index • Problem #1 - Global Reserves Life Index • Historical crude oil price **Petroleum Resources Management System (PRMS)** • What is PRMS • The stakeholders • Scope of projects • MRPS - major principles • Resources classification framework • Establishing PRMS total discovered petroleum initially in place • Establishing PRMS contingent resources & reserves **Resources Related Definitions** • Oil and gas accumulations • Conventional versus unconventional resources • Oil and gas field life cycle • Classification of reserves • Reserves terminology • Reserves versus resources • Economic limit (oil lease) • Economic limit (gas lease) • Problem # 2 - Economic Limit Calculation • Long-range marginal cost	**Fluid Flow through Porous Media** • Pressure transient • Flow regimes • Darcy's law • Darcy's law - linear flow • Problem # 4 - Darcy's Linear Flow • Darcy law - radial flow • Problem # 5 - Darcy's Radial Flow • Problem # 6 - Darcy's Radial Flow **Pressure Buildup Test** • Pressure buildup test analysis • Problem # 7 - Pressure buildup test analysis • Pressure buildup showing fault • Distance to no-flow boundary • Problem # 8 - distance to fault calculation **Pressure/Pressure Derivative Diagnostic Plots** • Pressure/Pressure Derivative Plot • Well test diagnostic plot indicating several flow regimes • Volumetric behavior - wellbore storage • Wellbore storage effect • Radial flow • Linear flow • Bilinear flow • Spherical flow **Reservoir Diagnostics** • Problem # 9 - Reservoir Diagnostics • Radius of investigation • Estimating drainage area • Estimate shut-in duration • Altered zone and skin factor • Significance of skin factor • Flow efficiency • Effective wellbore radius	**Decline Curves Analysis (DCA)** • Assessment of resources • Volumetrics • Problem # 13 - Oil Pore Volume Calculation • Decline curves (rate-time) • Advantages of decline curves • Assumptions used • Types of rate-time decline curves • Decline model identification • Graph of exponential decline • Exponential decline equations • Problem # 14 - Exponential decline • Problem # 15 - Exponential decline • Graph of hyperbolic decline • Rate-time plot (linear graph) • Hyperbolic decline equations • Problem # 16 - Hyperbolic decline • Harmonic decline equations • Determining decline parameters • Curve shift on log-log plot **History of DCA Methods** • Arps - 1945 • Slider - 1964 • Fetkovich - 1980 • Mian - 1984 & Neal & Mian - 1989 • Long and Davis - 1988 • Ilk et al - 2010 • Duong - 2010 **Other Decline Curves** • Fetkovich type curves • Rate-cumulative production plot • Gas & condensate production • Cumulative gas vs. cumulative condensate production plot • Water-cut vs. cumulative oil plot • p/z vs. cumulative gas production plot • Proposed diagnostic plots

(LRMC)

- Problem # 3 - LRMC Calculation

Reservoir Depletion Mechanisms

- Reservoir pressure
- Types of reservoir drive mechanisms
- Solution gas-drive reservoir
- Properties of solution gas-drive reservoir
- Gas-cap drive reservoir
- Properties of gas-cap drive reservoirs
- Water-drive reservoirs
- Properties of water-drive reservoirs
- Combination-drive reservoirs

- Problem # 10 - Reservoir Diagnostics
- Productivity index
- Inflow Performance Relation (IPR)
- Straight-Line IPR
- Problem # 11 - Productivity Index & IPR
- Gas well IPR
- Problem # 12 - Multi-Rate Gas Well Test
- Dimensionless variables
- Characteristic signature of flow periods
- Infinite acting radial flow
- Wellbore storage
- Infinite conductivity fracture
- Dual porosity system

Supplementary Material

- Diffusivity Equation
- Solution for transient radial flow toward well
- Solution to the diffusivity equation
- The Ei function
- Pseudosteady-state flow

Unconventional Gas Development Strategy

- Decision gates
- Exploration – confirm play elements
- Pilot and delineation
- Evaluating the UG pilot
- Optimizing the UG pilot
- Unconventional resource assessment
- Determine appropriate analogs
- Reservoir evaluation
- Resource play decision tree

Water Control Diagnostic Plots

- Water coning & channeling
- Multilayer channeling
- Bottom-water coning
- Gas coning in an oil well

Unconventional Gas Resources

- Production forecast rules of thumb
- Conventional gas vs. unconventional gas
- Tight gas vs. shale gas
- Monetizing unconventional gas
- The gas resource triangle
- Factors influencing monetization of UG
- Global shale gas resources
- Global UG production
- Breakeven gas price
- Schematic geology of natural gas resources

Forecasting Unconventional Gas

- Challenges in evaluating UG
- Review of DCA methods for UG
- Flow regimes in UG reservoirs
- Modified hyperbolic decline
- qg/Gp vs. time on log-log graph
- 1/qg vs. square root of time plot on linear graph
- qg vs. t on log-log graph with ½ slope
- Hybrid rate-decline model
- Comparative result from DCA methods

References for DCA Methods

- Decline Curve Analysis Worksheets
- Exponential decline
- Hyperbolic decline
- Modified hyperbolic decline
- Shifting curve on log-log plot
- Log-log plot of qg/Gp versus t
- 1/qg versus square root of time
- qg vs. t on log-log plot with ½ slope

Generating Probabilistic Production Forecast using Monte Carlo Simulation

3 Day

Petroleum Resource Management System (PRMS)

Instructor(s): M. A. Mian

Reporting accurate assessment of quantities of hydrocarbons that exist in the subsurface and can be economically recovered is one of the most important annual tasks of the oil and gas E&P companies. The task involves effort from multi-disciplinary professionals who utilize a series of interpretations on technical and commercial issues.

Public E&P companies are required to annually file estimates of their holdings with government regulatory agencies, such as Securities & Exchange Commission (SEC). The same estimates are also presented in the companies' annual reports for the stockholders, lenders and investors. Estimation of reserves and resources involve many technical assumptions. Therefore, it is important that consistent assumptions are used by the professionals to arrive at these assessments. Use of consistent assumptions and methodology will enable the regulatory agencies, lenders and investors make apple-to-apple comparison of the numbers reported by various E&P companies. In 2011, the Society of Petroleum Engineers (SPE) released new guidelines to address this need.

The PRMS is designed to provide consistency in estimating naturally occurring petroleum quantities, evaluating projects to commercially extract and market the derived products, and present results within a comprehensive classification framework. It provides standardized definitions of petroleum resources and how they are estimated.

What will this course cover?

The objective of this 3-Day course is to familiarize the petroleum engineers, geologists, geophysicists and other personnel dealing with E&P companies' annual disclosures with the PRMS. Provide detailed practical examples to reinforce the definitions presented in the PRMS. This course will introduce the guidelines in a consistent, easy to interpret and cohesive manner to make sure all the professionals involved are fully familiar with the PRMS.

What will you learn?	Who will benefit
On completion of this course you will be able to fully understand the following: • Learn the standardized definitions of petroleum resources and how they are estimated • Techniques to enhance management of your company's total hydrocarbon resource portfolio • Provide consistency in estimating naturally occurring petroleum quantities • Evaluate projects to commercially extract and market the derived products • Present your company's reserves and resources within a comprehensive classification framework.	The following oil & gas company personnel will benefit from the knowledge shared in this course. • Reservoir Engineers • Geologists • Petrophysists • Geophysists • Economists and planners • Supervisors and management responsible for the reserves reporting • Government regulators • Bankers & Stock Brokers

DAY 1	DAY 2	DAY 3
The Global Marketplace • Oil and gas regions • World's oil reserves situation • World's gas reserves situation • World's crude oil production • World's gas production • Global energy mix • Global crude oil consumption • Global natural gas consumption • Middle east oil consumption • Key performance indicators (KPIs) • Reserves replacement ratio • Global oil reserves life index • Global gas reserves life index **Petroleum Resources Management System (PRMS)** • What is PRMS • The stakeholders • Scope of projects • MRPS - major principles • Resources classification framework • Establishing PRMS total discovered petroleum initially in place • Establishing PRMS contingent resources & reserves **Introduction** • Oil and Gas Fields Life Cycle Activity • Rationale for New Applications Guidelines • History of Petroleum Reserves and Resources Definitions **Basic Principles and Definitions** • Petroleum Resources Classification Framework • Project-Based Resources Evaluations • Defining Projects	**Classification and Categorization Guidelines** • Resources Classification • Resources Categorization • Incremental Projects • Unconventional Resources **Evaluation and Reporting Guidelines** • Commercial Evaluations • Production Measurement • Resources Entitlement and Recognition **Estimating Recoverable Quantities** • Introduction • Analytical Procedures • Deterministic Methods • Probabilistic Methods • Scenario Method • Practical Applications **Aggregating Reserves** • Introduction • Aggregating Over Reserves Levels (Wells, Reservoirs, Fields, Companies, Countries) • Adding Proved Reserves • Aggregating Over Resource Classes • Scenario Methods • Normalization and Standardization of Volumes **Evaluation of Petroleum Reserves and Resources** • Introduction • Cash-Flow-Based Commercial Evaluations • Definitions of Essential Terms • Development and Analysis of Project Cash Flows • Application Example	**Uncertainty** • Range of Uncertainty Categorization • Methods for Estimating the Range of Uncertainty in Recoverable Quantities • Commercial Risk and Reported Quantities • Project Maturity Subclasses • Reserves Status • Economic Status **Seismic Application** • Introduction • Seismic Estimation of Reserves and Resources • Uncertainty in Seismic Predictions • Seismic Inversion **Unconventional Resources Estimation** • Extra-Heavy Oil • Bitumen • Tight Gas Formations • Coalbed Methane • Shale Gas • Oil Shale • Gas Hydrates **Resources Entitlement and Recognition** • Introduction • Regulations, Standards, and Definitions • Reserves and Resources Recognition • Agreements and Contracts • Example Cases

4 Day

Reservoir Engineering – Intermediate Level

Instructor(s): M. A. Mian

Reservoir engineering is the petroleum engineering discipline that is concerned with the recovery of hydrocarbons from subsurface hydrocarbon-bearing rock formations (reservoirs).Reservoir engineering is the backbone of the exploration and production activity. Without knowing the amount of oil and/or gas we have in the reservoirs, how much of it can be produced and how the reservoirs will perform (exponential decline or hyperbolic decline etc.), it will not be possible to develop the oil and gas discoveries.

The objective of this 4-Day course is to bring together the fundamentals of oil & gas reservoir engineering in a coherent and systematic manner. It is in intended for both students who are new to the subject and practitioners as a refresher. The course is organized into 12 main sections and each section includes several worked exercises. The exercises form an integral part of the course. The objective of the exercises is to illustrate the application of the theoretical concepts to real life problems encountered by the reservoir engineers.

The course presents reservoir engineering aspects of both conventional and unconventional gas reservoirs.

What will this course cover?

At the end of the course participants will be able to understand the physics of oil and gas reservoirs and apply reservoir engineering methods and appreciate the construction and use of reservoir models. They will have acquired the skills necessary for estimation of petroleum reserves, development planning and to assess uncertainties. Practical experience will be obtained in integrated field development work by addressing pertinent problems in study teams. An Excel spreadsheet (PEPAC) is provided to each participant that can be used for all reservoir engineering calculations.

What will you learn?	Who will benefit
On completion of this course you will be able to fully understand the following: • Oil & Gas properties using PVT analysis and empirical correlations • Oil & Gas reserves calculations (pore volume calculations, recovery factor and material balance calculations) • Forecasting oil & gas production, in conventional and unconventional reservoirs, using decline curve analysis • Well deliverability calculations • Design and interpretation of oil & gas well production tests • Economics of oil & gas filed development	The following oil & gas company personnel will benefit from the knowledge shared in this course. • Reservoir Engineers • Production Engineers • Petroleum Geologists • Petrophysists • Geophysists • Economists and planners • Supervisors and management responsible for reserves reporting & reservoir management • Government regulators • Bankers & Stock Brokers

DAY 1	DAY 2	DAY 3	DAY 4
Introduction • Typical oil & gas accumulations • Classification of oil and gas • Reservoir drive mechanisms **The Global Market Place** • Oil and gas regions • World's oil reserves situation • World's gas reserves situation • World's crude oil production • World's gas production • Global energy mix • Global crude oil consumption • Global natural gas consumption • Middle east oil consumption • Key performance indicators (KPIs) • Reserves replacement ratio • Global oil reserves life index • Global gas reserves life index **Reservoir Rock Properties** • Reservoir rock types • Porosity • Capillary pressure • Absolute, effective and relative permeability • Rock compressibility • Averaging reservoir properties **Problems and Solutions**	**Oil & Gas Properties** • Oil & gas formation volume factor • Oil & gas viscosity • Oil & gas compressibility • Gas deviation factor • Total compressibility **Reserves Calculations** • Bulk volume • Pore volume • Hydrocarbon pore volume • Gas & condensate initially in place • Recoverable reserves **Decline Curve Analysis** • Advantages of decline curves • Assumptions used • Exponential decline • Hyperbolic decline • Harmonic decline • p/z vs. cumulative gas production • Decline curves on unconventional gas reservoirs **Material Balance Calculations** • Oil & gas material balance • Gas condensate reservoirs • Non volumetric depletion • Abnormally pressured reservoirs • Aquifer influx • **Developing Spreadsheets** • **Problems and Solutions**	**Fluid Flow through Porous Media** • Pressure transient • Flow regimes • Darcy's law • Darcy's law - linear flow • Darcy law - radial flow **Gas Well Testing** • Backpressure equations • Flow-after-flow tests • Isochronal and modified isochronal tests **Transient well pressure equations** • Drawdown tests • Buildup tests • Multiple rate transient tests **Wellbore Flow Mechanics** • Single-phase flow equations • Pressure distribution in shut-in well • Pressure distribution in producing well • Multiphase flow • Minimum unloading rate **Problems and Solutions**	**Unconventional Gas Resources** • Production forecast rules of thumb • Conventional gas vs. unconventional gas • Tight gas vs. shale gas • Monetizing unconventional gas • The gas resource triangle • Factors influencing monetization of UG • Global shale gas resources • Global UG production • Breakeven gas price • Schematic geology of natural gas resources **Field Development Economics** • Gas processing flow chart • Oil field flow diagram • CAPEX Estimate • OPEX Rules of thumb • Drilling cost • Number of wells required to sustain a plateau • Before-tax and after –tax cash-flows • Wet gas economics • Dry gas economics • Long-range marginal cost calculation • NPV, IRR, PI and payback period calculation

4 Day

Gas Reservoir Engineering – Intermediate Level

Instructor(s): M. A. Mian

Reservoir engineering is the petroleum engineering discipline that is concerned with the recovery of hydrocarbons from subsurface hydrocarbon-bearing rock formations (reservoirs). Gas reservoir engineering is the branch of reservoir engineering that deals exclusively with reservoirs of non-associated gas. It is expected that in the decades to come natural gas will gain prominence among the world's energy resources.

The objective of this 4-Day course is to bring together the fundamentals of gas reservoir engineering in a coherent and systematic manner. It is in intended for both students who are new to the subject and practitioners as a refresher. The course is organized into 12 main sections and each section includes several worked exercises. The exercises form an integral part of the course. The objective of the exercises is to illustrate the application of the theoretical concepts to real life problems encountered by the reservoir engineers.

The course presents reservoir engineering aspects of both conventional and unconventional gas reservoirs.

What will this course cover?

This course will cover (a) gas properties and analyzing PVT data, (b) gas reserves calculations, (c) forecasting gas production and associated products, (d) gas well test analysis, (e) gas well deliverability calculations, (f) forecasting production of unconventional gas reservoirs, and (g) economics of gas field development. An Excel spreadsheet (PEPAC) is provided to each participant that can be used for all the gas reservoir calculations.

What will you learn?	Who will benefit
On completion of this course you will be able to fully understand the following: • Gas properties using PVT analysis and empirical correlations • Calculation of NGLs from PVT data • Gas reserves calculations (pore volume calculations, recovery factor and material balance calculations) • Forecasting gas production, in conventional and unconventional reservoirs, using decline curve analysis • Gas well deliverability calculations • Design and interpretation of gas well production tests • Economics of gas filed development	The following oil & gas company personnel will benefit from the knowledge shared in this course. • Reservoir Engineers • Production Engineers • Petroleum Geologists • Petrophysists • Geophysists • Economists and planners • Supervisors and management responsible for reserves reporting & reservoir management • Government regulators • Bankers & Stock Brokers

DAY 1	DAY 2	DAY 3	DAY 4
Introduction • Natural gas • Objective & organization • The gas resources triangle **The Global Market Place** • Oil and gas regions • World's oil reserves situation • World's gas reserves situation • World's crude oil production • World's gas production • Global energy mix • Global crude oil consumption • Global natural gas consumption • Middle east oil consumption • Key performance indicators (KPIs) • Reserves replacement ratio • Global oil reserves life index • Global gas reserves life index **Reservoir Rock Properties** • Reservoir rock types • Porosity • Capillary pressure • Absolute, effective and relative permeability • Rock compressibility • Averaging reservoir properties **Problems and Solutions**	**Gas Properties** • Gas formation volume factor • Gas deviation factor • Gas compressibility • Gas viscosity **Reserves Calculations** • Bulk volume • Pore volume • Hydrocarbon pore volume • Gas & condensate initially in place • Recoverable reserves **Decline Curve Analysis** • Advantages of decline curves • Assumptions used • Exponential decline • Hyperbolic decline • Harmonic decline • p/z vs. cumulative gas production • Decline curves on unconventional gas reservoirs **Material Balance Calculations** • Wet gas reservoirs • Gas condensate reservoirs • Non volumetric depletion • Abnormally pressured reservoirs • Aquifer influx **Developing Spreadsheets** **Problems and Solutions**	**Fluid Flow through Porous Media** • Pressure transient • Flow regimes • Darcy's law • Darcy's law - linear flow • Darcy law - radial flow **Gas Well Testing** • Backpressure equations • Flow-after-flow tests • Isochronal and modified isochronal tests • Transient well pressure equations • Drawdown tests • Buildup tests • Multiple rate transient tests **Wellbore Flow Mechanics** • Single-phase flow equations • Pressure distribution in shut-in well • Pressure distribution in producing well • Multiphase flow • Minimum unloading rate **Problems and Solutions**	**Unconventional Gas Resources** • Production forecast rules of thumb • Conventional gas vs. unconventional gas • Tight gas vs. shale gas • Monetizing unconventional gas • The gas resource triangle • Factors influencing monetization of UG • Global shale gas resources • Global UG production • Breakeven gas price • Schematic geology of natural gas resources **Field Development Economics** • Gas processing flow chart • CAPEX Estimate • OPEX Rules of thumb • Drilling cost • Number of well required to sustain a plateau • Before-tax and after –tax cash-flows • Wet gas economics • Dry gas economics • Long-range marginal cost calculation • NPV, IRR, PI and payback period calculation

Drilling Engineering

3 Day

Offshore & Deep Water Drilling

Instructor: Dr. Qamar J. Sharif

This 3-Day course provides comprehensive, hands-on workshop on the fundamentals of offshore drilling. If you're new to offshore drilling, and looking for a comprehensive overview of how it all really works, the brand-new 3 Day MBA in Offshore Drilling is designed with you in mind.

This hands-on training course will walk you through offshore drilling operations, technology and costs, as well as taking you through issues such as health and safety and environmental concerns.

What will this course cover?

Difference between onshore and offshore drilling, drilling cost analysis, components of drilling rig, reasons for directional drilling, tools used for directional drilling, how to optimize parameters (such as bit selection, mud design, casing design and so on), HSE and logistics requirements during offshore drilling.

What will you learn?	Who will benefit
On completion of this course you will be able to fully understand the following: • Get to grips with the fundamentals of offshore drilling and find out how it differs from land drilling • Learn all you need to know about the drilling rig, basic well design, drilling bits, routine drilling operations, and much more • Find out how to carry out a drilling cost analysis • Discover how to estimate drilling costs, calculate the daily rig rate, and account for variable costs • Consider the reasons for directional drilling, as well as looking at the tools and measurements involved • Find out how to select and evaluate a drilling bit, as well as optimizing your drilling hydraulics • Learn all about the role of weather conditions, supply vessels and sea port facilities • Explore health, safety and security in the offshore drilling environment	The following oil & gas company personnel will benefit from the knowledge shared in this course. • Drilling engineers • Drilling superintendents and foremen • Reservoir Engineers • Petrophysists • Geoscientists • Economists and planners • Facilities planning engineers • Accountants • Mid-level management

DAY 1	DAY 2	DAY 3
Big Picture of the Oil & Gas Industry • Meaning of petroleum • Typical oil and gas company objectives • Industry streams • World reserves and production • Peak oil • Production management • Quotas and capacities (OPEC/Non-OPEC) • Market distribution and dynamics • Role of IOCs, NOCs and regulatory bodies • Glossary of terms **Fundamentals of Drilling** • The drilling rig: types and components • The drilling team • Drilling fluids (mud) and circulating system • Basic well design • Drilling bits • Directional and horizontal drilling • Routine drilling operations • Well monitoring • Well control • Wellbore problems and preventions • Special drilling operations (coring, fishing, etc.) **Case Studies:** Mud weight window, rig horse-power and drilling depth **Offshore Drilling** • Differences between land and offshore • Water depth and rig types (deep water MODUs – Mobile Offshore Drilling Units) • Sea bed preparation • Fixed platform • Floating drilling and station keeping • Motion compensation • Conductor casing (jetting/riserless drilling) • Subsea BOP stack • Marine/production riser for various deep water applications • Slip joint • Rotating head & ROVs	**Drilling Cost Analysis** • Drilling cost estimation • Authorisation for Expenditure (AFE) • Daily rig rate • Fixed operating costs • Variable costs • Drilling contingencies • Non-productive time • Drilling performance and optimization **Case Studies:** Cost per foot, bit performance **Directional/Horizontal Drilling** • Reasons for directional drilling • Definitions • Directional tools • Well trajectories • Directional drilling measurements • Hole cleaning • Extended reach wells (case study) **• Drilling Bits** • Types of bits • Rock failure mechanisms • Bit selection and evaluation • Factors affecting rate of penetration **Drilling Hydraulics** • Hydrostatic pressure • Buoyancy • Rheological models • Bit nozzle size selection • Drilling hydraulic optimization • Hole cleaning/cutting transport	**Drilling Fluids (Mud)** • Functions of drilling fluids • Mud properties • Water-based muds • Oil-based muds **Logistic Support and Services** • Weather conditions • Supply vessels • Helicopter • Land base • Sea port facility **Health, Safety, Environment and Security** • Health, safety, environment and security • Elements of drilling/production safety and regulations • Think of unthinkable (scenario planning) • Minimal operational requirements • Learning from disasters • Oil spill prevention and response • First responders and emergency equipment **U-Turn**: work through your own problems and walk away with real solutions to your workplace challenges! **Well Completion and Production** • Near wellbore formation damage • Evaluating a well, logging, MWD and LWD • Types of completions • Perforating a well • Well testing • Reservoir stimulation • Completion equipment, concepts and techniques • Multizone completions • Artificial lift technique • Workover operations • DW field development costs • FPSO/subsea schemes instead of floating platforms **Case Studies** **Course Summary and Wrap-Up**

3 Day

Drilling for Non-Drilling Personnel

Instructor: Dr. Qamar J. Sharif

This 3-Day course provides a comprehensive overview of the fundamentals of oil and gas drilling engineering concepts and day-to-day operations. It elaborates on drilling terminologies commonly used in drilling operations, rig equipment and their functions. If you're new to drilling and looking for a comprehensive overview of how it all really works. This brand-new “3 Days: Drilling for Non-Drilling Personnel” course is designed with you in mind.

This hands-on training course will walk you through drilling operations, technology and costs and what it takes to plan and drill a well, as well as the logistics and roles of various service companies involved in the process. At the end of the course, you will be literate in oil and gas and be able to read and understand a daily drilling report!

What will this course cover?

Fundamentals of drilling operations; the drilling rig equipment and their functions; drilling terminologies; drilling processes; planning of drilling operations; logistics, role and responsibilities of service companies including drilling contractor; the functions of drilling fluid, casing, cementing and components of a drill string; the different types of drilling contracts and the types of wells; and, HSE and resources requirements during drilling.

What will you learn?	Who will benefit
On completion of this course you will be able to fully understand the following: • Understand the concepts and terminology • How oil and gas is formed in the earth and basic geology • Get to grips with the fundamentals of drilling • Learn all you need to know about the drilling rig, basic well design, drilling bits, and routine drilling operations • How to calculate a drilling cost analysis • Discover how to estimate drilling costs, calculate the daily rig rate, and account for variable costs • Explore health, safety and security in the drilling environment	The following oil and gas company personnel will benefit from the knowledge shared in this course: • Reservoir Engineers • Petrophysicists • Geoscientists • Economists and planners • Facilities planning engineers • Accountants • Mid-level management • Service Companies • Logistics • Procurement • IT, HR and HSE personnel • Secretaries and support staff

DAY 1	DAY 2	DAY 3
Introduction to Oil & Gas Industry • Oil and Gas Development • Formations, rock pressure, and hydrocarbon traps • Petroleum reservoirs • Exploration processes **Introduction to Drilling** • Definitions and terminologies • Drilling rig team • Oil company structure • Drilling contractor responsibilities • Drilling service companies responsibilities • Drilling rig types • Land rigs • Offshore rigs **Drilling Rig Components** • Drilling rig components and functions • Rig power system • Hoisting system • Circulating system • Rotating system • Drilling data recording system • Well control system **Well Planning and Design** • Well planning and design process • Data inputs • Long lead time items and procurement • Offset wells reviews • Well Cost Estimate (AFE) • Drilling fluids design • Well trajectories • Directional drilling	**Drilling Bits** • Types of bits • Classification of bits • Rock failure mechanisms • Bit records • Components of drill string **Drilling Operations and Hole Cleaning** • Well drilling activities • Drilling parameters • Drilled cuttings handling • Drilling fluids (mud) • Typical drilling problems and lost time **Functions of Drilling Fluids** • Mud properties • Water-based muds • Oil-based muds • Hydrostatic pressure • Buoyancy • Rheological models **Casing and Cementing** • Functions of casing and cementing • Properties of cement • Single stage and multi-stage cementing **Blowout Prevention System** • Well control • Kick and its causes • Prevention of kicks • Well Shut-in • Well kill operations	**Logistic Support and Services** • Rig location and access to services • Weather conditions • Supply vessels • Helicopters • Land base • Sea port facility **Health, Safety, Environment and Security** • People and safety • Personal Protective Equipment (PPE) • Drilling operations and equipment safety • Slip and trip • Fall protection • Hazardous Energy • Chemical Hazards • Fire Safety • Hydrogen sulfide safety • Oil spill prevention and response • First Aid **Well Completion** • Types of completions • Perforating a well • Well testing • Completion equipment, concepts and techniques • Multizone completions • Artificial lift technique • Workover operations • Wireline pressure control equipment and Christmas tree

3 Day

Stuck Pipe Prevention

Instructor: Dr. Qamar J. Sharif

This 3-Day course is designed with the simple phrase in mind: “Prevention is Better than Cure”. The course provides a comprehensive understanding of three stuck pipe mechanisms, causes leading to each mechanism, and recognition of warning signs. Participants will learn how to perform the trend analysis and learn to “listen to the well” by understanding the “language of the well.”

The course includes a stuck pipe mechanism identification table and recommends the first actions for each mechanism. Stuck pipe case histories are included to enhance the learning. The course also covers knowledge of the formations and borehole instability problems and recommends guidelines to empower the driller on best tripping practices. We recommended that the course is taken by the rig team together, as a team building exercise as well as an opportunity to improve communication skills.

This operations-oriented training emphasizes a proactive approach to stuck pipe prevention. It teaches how to “listen to the well” and perform trend analysis. The course also focuses on how to detect the causes leading to stuck pipe at an early stage and what preventive actions to take before full sticking occurs.

What will this course cover?

The course emphasizes the importance of recognizing the signs at an early stage and taking PREVENTIVE actions before the sticking takes place. It is designed to increase the knowledge and competency of the drilling crews. It empowers the drilling crew to perform correct diagnosis, improve communication, and take the correct “First Actions” to prevent stuck pipe incidents. Studies have shown that about 90% of stuck pipe incidents can be freed with appropriate “First Actions” within the first 4 hours of sticking. The course also includes the effective use of drilling jars and understanding of pump open force.

What will you learn?	Who will benefit
On completion of this course you will be able to fully understand how to: • Identify the three sticking mechanisms and their causes • Recognize the sticking causes at an early stage and what preventive actions to take before full sticking develops • Understand the fundamentals of hole cleaning • Discover techniques on stuck pipe prevention • Learn to “listen to the well” • Perform trend analysis of drilling parameters • Read a stratigraphic column with identification of potential problem formations • Review case histories with in-depth analysis. • Understand the workings of drilling jars, pump open force, and jarring load calculations • Appreciate the team approach and the need for good communication • Identify the sticking mechanism and what “First Actions” to take to free a stuck pipe	The following oil and gas company personnel will benefit from the knowledge shared in this course: • Drilling crews • Rig Managers • Drilling Foreman • Drilling engineers • Mud engineers • Wellsite geologists • Directional drillers • Drilling contractors staff

DAY 1	DAY 2	DAY 3
Introduction to Oil & Gas Drilling • Oil and gas development • Formations, rock pressure, fluid traps • Fundamentals of petroleum • Basic geology **Major Causes of Lost Time** • Definitions • Global statistics • Stuck pipe causes and mechanisms **Rock Mechanics** • Stratigraphic column • Deviated and horizontal wells • Wellbore stresses and instability • Drilling window • Drilling fluid properties and mud weight • Video **Identification of Sticking Mechanisms** • Use of identification table • Hole pack-off / bridging • Wellbore geometry • Differential sticking • “First Actions” • Exercise	**Drilling Jars** • Types of drilling jars • How jars work • Pump-open force • Calculation of jarring loads • Why jars don’t work • Jars placement • Exercise **Hole Pack-Off / Bridging** • First mechanism • Causes • Drilled cuttings – bit • Caving – not from bit • Causes of insufficient hole cleaning • Annular velocity • Hole angle • Boycott effect • Pipe rotation • Video • Hole cleaning guidelines • “First Actions” • Exercise • Causes of bore hole instability • Tripping guidelines **Well is Talking** • Drilling parameters recording • “Learning to Listen” – trend analysis • Geolograph exercise	**Wellbore Geometry** • Second mechanism • Causes • Key seating • Ledges and doglegs • Under-gauge hole • Collapsed casing • Junk • Shoe joint back-off • “First Actions” FIRST ACTIONS • Exercise **Differential Sticking** • Third mechanism • Fire prevention triangle and differential sticking prevention square • Calculation of differential sticking force • Causes • Preventive measures • “First Actions” • Exercise **Economics of Fishing** • Time value of money • Probability model • Time limit for fishing operations • Stuck point determination, pipe stretch method **Consolidation** • Team work • Implementation of learning • Recommendations

3 Day

Drilling Hydraulics Design

Instructor: Dr. Qamar J. Sharif

This 3-Day course is designed for drilling operational staff and drilling engineers. The objective of the course is to determine subsurface wellbore pressures during drilling operations under static and dynamic conditions. It starts with a calculation of hydrostatic pressure using high school mathematical equations and physical laws governing fluid dynamics. After refreshing basic concepts, the course explores how to calculate the forces and stresses in submerged tubular, the density of drilling fluids required to drill safely and efficiently, various rheological models for calculating frictional pressure losses in tubular and in annulus, the surge and swab pressures while moving the drill string, optimizing drilling rates according to the design and size of the bit nozzle and the annular velocity for efficient cutting removal from the wellbore.

What will this course cover?

This course covers the conversion between English and metric units, with an emphasis on commonly used units in the oil and gas field operations; properties of drilling fluids; properties of gases and ideal gas law; calculation of hydrostatic pressure of liquid and gas columns; buoyancy factor; axial stresses in tubular; forces balance and free body diagram; identification of a kick and well control; estimation of formation pore pressure and fracture gradients; loss circulation; fluid flow calculations; hydraulic horse power; rheological models; flow regimes; Reynolds's number; bit hydraulics and optimum bit nozzle sizes; and hole cleaning in vertical, directional and horizontal wells.

What will you learn?	Who will benefit
On completion of this course you will be able to fully understand the following: • Drilling fluid properties and hydraulic design • Axial stresses • Well control • Estimate of pore pressure • Prediction of fracture gradient • Fundamental laws of fluid flow • Rheological models • Hole cleaning in vertical and horizontal wells • Optimal bit nozzle sizes • Surge and swab pressures	The following oil & gas company personnel will benefit from the knowledge shared in this course: • Drilling crews • Rig managers • Drilling foremen • Drilling engineers • Mud engineers • Wellsite geologists • Directional drillers • Drilling contractors staff

DAY 1	DAY 2	DAY 3
Introduction to Oil & Gas Drilling • Oil and gas development • Formations, rock pressure, fluid traps • Fundamentals of petroleum • Basic geology • Drilling hydraulics **Drilling fluid properties** • Density • Compressibility of fluids • properties of gases • Z-Factor • Hydrostatic pressure • Annular pressure in complex fluid columns **Fluid Mechanics** • Free body diagram • Buoyancy • Forces and stresses in submerged tubular **Well Control** • Identification of a kick • Shut-in pressures • Kill mud weight calculations • Annular pressure during well control • Strength of casing shoe and maximum allowable annular pressure • Exercise	**Formation Pressure** • Pre-pressure development • Porosity and permeability • Pore pressure measurements • Fluid pressure gradient and mud weight requirements • Fluid level in annulus after loss circulation • Exercises **Prediction of Fracture Gradient** • Definition • Estimate fracture gradient from correlations • Measurement of fracture gradient – Leak of Test (LOT) • LOT data Analysis • Exercises **Basic Laws of Fluid Flow** • Introduction • Conservation of mass • Velocity equation • Energy and pressure balance equations • Hydraulic calculations • Pressure drop through bit nozzles **Rheological Models** • Introduction • Calculation of frictional pressure losses • Newtonian model • Bingham Plastic model • Power-Law model • Flow regimes, laminar and turbulent • Frictional pressure loss equations • Exercises	**Bit Hydraulics** • Introduction • Bit nozzle size design • Optimization of bit hydraulics • Bit hydraulic horsepower • Jet impact force • Exercise **Hole Cleaning in Vertical Wells** • Introduction • Particle slip velocity • Cutting transport ratio • Factors affecting hole cleaning • Empirical correlations • Exercise **Hole Cleaning in Directional Wells** • Same rules don't apply • Cutting transport in directional wells • Difficulties in hole cleaning at different angles • Factors affecting hole cleaning in directional wells • Flow rate requirements for hole cleaning in different hole conditions • Exercises **Swab and Surge** • Definitions • Burkhardt method • Mitchell method • Recommended speeds for running in hole and pulling out of hole • Exercises

Production Engineering

3 Day

Oil & Gas Production Management

Instructor: Dr. Qamar J. Sharif

The 3-Day course in Oil & Gas Production Management is an introductory-level training course designed to bridge knowledge gaps. It is most useful to those who are new to oil and gas production, senior managers needing a big picture refresher and professional advisors and suppliers to the industry.

The course is useful to those who work on the technical side, such as geologists and engineers, who need to hone their commercial or economic skills, as well as those who provide a service to or invest in the industry.

What will this course cover?

The course covers a wide range of topics related to production management. The topics covered include essentials of the industry, production chemistry and technology, production engineering, completion practices and well interventions, production facilities, production supply planning and scheduling, storage/transportation & marketing, environment convers in petroleum production, economics of production management, human resources management and disaster/contingency planning.

What will you learn?	Who will benefit
On completion of this course you will be able to fully understand the following: • Gain a thorough understanding of oil and gas production management • Understand the technology, facilities and chemistry involved, as well as production operations and logistics. • Look at the different elements of production technology, the units and conversions involved and reservoir production concepts. • Learn about storage, transportation and marketing • Understand the environmental considerations • Gain an understanding of the economics of production management • Understand disaster and contingency planning • Think of the unthinkable and learn how to calculate the maximum sustainable capacity. • Explore future trends and innovations • Save hours of research time by discovering the latest technological innovations and making the right economic decisions.	The following oil & gas company personnel will benefit from the knowledge shared in this course. • Drilling engineers • Drilling superintendents and foremen • Reservoir Engineers • Production Engineers • Petrophysists • Geoscientists • Economists and planners • Facilities planning engineers • Accountants • Mid-level management

DAY 1	DAY 2	DAY 3
Essentials of the Industry • Meaning of petroleum • Typical oil and gas company objectives • Industry streams • World reserves and production • Peak oil • Production management • Quotas and capacities (OPEC/non-OPEC) • Market distribution and dynamics • Role of IOCs, NOCs and regulatory bodies • Glossary of terms **Production Chemistry and Technology** • Role and scope • Production chemistry • Elements of production technology • Reservoir production concepts • Performance of flowing wells • Well deliverability and production forecast • Units and conversions • **Case Study:** gas-oil ratio, inflow performance, effect of skin on well productivity **Production Engineering** • Completion concepts and techniques • Casing, tubing and wellhead • Completion equipment • Completion design • Artificial lift techniques **Completion Practices and well Interventions** • Completion installations • Multi zone completions • Well interventions • Production problems • Causes of low productivity • Effect of water-cut on economics • Abandonments • **Case Study:** Tubing length change, integrity of well hardware, gas lift rate	**Production Facilities** • Process selection • Oil and gas separation • Crude oil treating systems • Condensate stabilization • Gas dehydration • Produced water-handling systems • Pumps and compressors–centrifugal and reciprocating • Offshore production facilities **Production Supply Planning and Scheduling** • Control room • Oil and gas measurement and regulations • SCADA systems • Custody transfer and royalty payment • Metering systems • Specification and procedures • Distribution pipeline network • New metering technologies • Case study: Gravity separation, • metering accuracy and financial impact **Storage, Transportation and Marketing** • Oil and gas storage • Transporting petroleum fluids • Sales and marketing • Challenges & improvements • Vertical integration **Environmental Concerns in Petroleum Production** • Waste generation • Handling oilfield wastes • Waste management and minimization • Industry perception on HS&E • Corporate responsibility • Safety standards • Environmental regulations in different regions • **Case Study:** Refining value, transportation cost, contamination limits	**Economics of Production Management** • Field appraisal and facilities planning • Feasibility studies • Capital investment planning and operating • Cost budgeting • Sensitivities analysis and investment • Grade estimate • Engineering, procurement and construction • Phases of production (primary, secondary and EOR) • Changing facilities needs • Economic limit **Case Study:** Feasibility study, economic limit **Human Resources Management** • Corporate objectives • HR management challenges • Increasing project demands • Lack of qualified people • Ageing workforce • Ineffective skills transfer • Local resources development and training • Leadership and culture • Role of government regulatory agencies **Disaster and Contingency Planning** • Scenario planning • Think of the unthinkable • Minimal operational requirements • Alternates • Strategic reserves • Maximum sustainable capacity **Future Trends** • Intelligent (smart) wells • I-Fields • Hi-tech control rooms • Innovations • Big ideas

5 Day

Artificial Lift and Production Optimization

Instructor(s): Dr. Rajan N. Chokshi

Ever increasing demands related to cost savings and efficiency improvement require that the existing as well as planned oil and gas production assets are fully and optimally utilized. Since most-all oil and gas wells require artificial lift for the majority of their productive life, the artificial lift systems are important part of production operations for the entire lifecycle of an asset. Careful selection, design and operation of artificial lift equipment is extremely important for profitability. Efficient and cost-effective production workflows involve field management using digital oilfield concepts. Understanding of these important production concepts are a must in order to profitably exploit the existing assets to the fullest extent. The objective of this course is to:

- Provide an awareness of the fundamentals of production by introducing fluid flow, flow correlations, PVT/Black Oil, and discussing the inflow performance relationship (IPR), vertical lift performance (VLP), nodal analysis, and pressure gradient curves.
- Introduce applications of major forms of artificial lift like gas-lift (GL), reciprocating rod lift (RRL), electrical submersible pumping (ESP), progressing cavity pumping (PCP), hydraulic jet and piston pump (HJP), plunger and capillary injection.
- Provide knowledge to the participants about the entire lift system - from downhole to the surface - and relevant components for GL, RRL, ESP, PCP, HJP, and Plunger.
- Discuss challenges facing lift applications.
- Introduce digital oilfield and related aspects specific to artificial lift.
- Explore the importance of downhole monitoring and surface measurements.

What will you learn?	Who will benefit
On completion of this course you will be able to fully understand the following: • A thorough treatment of artificial lift techniques for production optimization. • The basics as well as advanced concepts of each form of artificial lift systems from downhole to the surface including real-time optimization equipment and software. • Using appropriate software tools, how lift components are designed and analyzed. • Challenges facing lift applications. • Artificial lift selection and life cycle • How digital oilfield tools help address these challenges. Recent advances in real-time approaches to the production monitoring and lift management from field case studies	The following oil & gas company personnel will benefit from the knowledge shared in this course. • Production engineers and field operators • Reservoir engineers • Completion Engineers • Drilling and facilities engineers working in integrated project teams • Anyone who is interested in learning about selection, design, analysis and optimum operation of artificial lift and related production systems. • Project and asset managers interested in expanding their understanding of the effects of artificial lift on the performance of their assets.

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
System Analysis & Gas-lift • Pre-test • Multiphase flow • Inflow / Outflow Performance • Artificial Lift Systems: Basics, Why/What/How. • Continuous Gas-lift Overview • Applications, Pluses/Minuses • Mandrels • Valves • Well Performance Curve; Design example • Troubleshooting & Surveillance • Optimization Approaches	**Reciprocating Rod Lift** • RRL Chain, Pump Motion, Applications, Pluses/Minuses • Pump • Dynamometer cards • Surface Pumping Units • Rod Strings & Rod Life • Optimization using RPC, VFD • Design example • Special conditions: gas interference, deviated wells, heavy fluids	**Electrical Submersible Pumps (ESPs)** • ESP Overview, Applications, Pluses/Minuses • Pump • Intake • Gas Separator • Seal • Motor • Cable • Surface Equipment • Basic ESP Design • Well Performance Curve and Design considerations • Example • ESP Problems • Automation	**PCP, Hydraulic Lift, Gas Well Deliquification** • PCP Overview, Applications, Pluses/minuses • PCP Pump Fundamentals • Surface Equipment • System Design considerations, Example • Alternative configurations • Hydraulic lift basics; applications, Pluses/minuses • Pumps • Surface Equipment • Non-Traditional Uses • Gas Well Deliquification Problem	**Capillary, Plunger Lift, Digital Oil Field** • Capillary applications, pluses/minuses • Chemical Delivery • Selection considerations • Special applications in Shale, long perforations • Plunger lift applications, pluses/minuses • Plungers, BHA • Surface setup • Selection • Digital oil field: What & Why • Components • Data Management • DOF Case study • Artificial lift selection: lift life-cycle and lift changeovers • Post-test

Note: This course is customizable from one to five days length for a variety of audiences at appropriate skill and knowledge levels. Shorter and concise curriculum is available for project and asset managers interested in expanding their understanding of the effects of artificial lift on the performance of their assets.

Project Management

5 Day

Practical Instrumentation

Instructor(s): Dr. M. A. Choudhury

This 5-Day course covers the design basis of instrumentation, practical steps for project execution, construction & installation, pre-commissioning/commissioning, operation and maintenance, monitoring and control systems to be installed at oil and Gas facilities, refineries, chemical and petro-chemical plants.

Basically, this course covers overall duties and responsibilities of the instrument engineer in the above mentioned industries. Guidelines and practical steps are mentioned here which outline the organisation and execution of an engineering project as it relates to instrumentation.

Project documents requirement and check list for successful completion of project has been listed. The principles outlined apply to projects whose capital investment range from small to largest of projects.

What will this course cover?

The basic objective of this course is to improve skills of Instrument engineers to complete Instrumentation related projects in a planned and systematic way. This course will highlight various types of instrumentation available in the market, suitable selection of right type instruments, practical steps for preparing specifications, installation & construction, commissioning to final inspection to ensure successfully completion a project.

What will you learn?	Who will benefit
During this comprehensive study program, you will learn: • Instrumentation terms, concepts, diagrams and symbols • Pressure sources and the basic terms of pressure measurement • Level, temperature and flow measurements • Control valve principles and common valve types • New technologies such as smart instrumentation and fieldbus • Integrate a complete system (considering instrumentation and total errors) as well as selection criteria, commissioning and testing • Latest ISO requirements for a company • Overview of HAZOP studies • Understand reliability centered maintenance and spare parts analysis • Process control basics with an emphasis on control loops	This Practical Instrumentation course is suitable for practicing industry professionals looking to expand their current knowledge in the field of Industrial Automation, Instrumentation and Process Control. The following oil & gas company personnel will benefit from the knowledge shared in this course. • Facilities Engineer • Project Engineers/Managers • Asset Integrity Engineers/Managers • Instrument Engineers • Control Engineers • Instrument Inspection Engineers • Auditors • HSE related Technical Staff

DAY 1	DAY 2	DAY 3
Module 1: Project Initiation Requirements • Project Specification • Unit of Measurement • Site Data and Environment Conditions • Hazardous Area Classification • Drawings and Documents • Codes and Standards **Module 2: Design Criteria for Instrumentation System** • General • Scale Range • Identification of instruments • Enclosure • Connections • Material of Construction • Accessories • Process Take-Off Connections for Instruments • Instrument Junction Boxes **Module 3: Transmission Systems** • Introduction • Electrical Transmission System • Power Supply • Instrument Cables and Cable Glands • Cable Trays and Junction Boxes • Instrument Earthing • Pneumatic transmission system • Installation of Pneumatic System • Pressure Testing of Pneumatic System **Problems and Solutions**	**Module 4: Pressure Measurement** • Pressure Measurement Methods • Basic Performance and Accuracy • Project Specification Requirements • Installation considerations • Operation and Maintenance Inspection and Audits Future pressure technologies **Module 5: Level Measurement** • Level Measurement Methods • Project Specification Requirements • Installation considerations • Operation and Maintenance Inspection and Audits • Future Level technologies **Problems and Solutions**	**Module 6: Temperature Measurement** • Temperature Measurement Methods • Project Specification Requirements • Installation considerations • Operation and Maintenance • Inspection and Audits • Future Temperature technologies **Module 7: Flow & Mass Measurement** • Flow Measurement • Primary Methods • Project Specification Requirements • Installation considerations • Operation and Maintenance • Inspection and Audits • Future Flow technologies **Problems and Solutions**

DAY 4	DAY 5
Module 8: Before-Tax (BTAX) Cash-Flow • Problems and Solutions • Types of Control Valves • Trim Types • Control valves and Accessories • Actuators and Valve Positioners • Selection and Sizing of Control Valves • Project Specification Requirements • Installation and Construction • Operation and Maintenance • Inspection and Audit • Emergency Shutdown valves (SDV)/Blow Down Valves (BDV) • Solenoid Valves / Limit Switches **Module 9: Process Analyzers** • Analyzers Operation Principles • Most Commonly Used Analyzers • Project Specification Requirements • Installation considerations • Operation and Maintenance • Inspection and Audits **Problems & Solutions**	**Module 10: Miscellaneous Instruments** • Annunciator System • Transducers and Converters • Regulators • Fire and Gas Monitors • CCTV • Vibration Monitoring System • Custody Transfer Metering System **Module 11: Quality and Reliability Assessment** • Quality Certification ISO 9001 • HSE Risk Assessment • HAZOP/Area Classification • Reliability Centered Maintenance and Operation • Spare Parts Analysis • Acceptability Testing (FAT and SAT) **Problems & Solutions**

For Nontechnical & Non Geoscientists

3 Day

Fundamentals of Oil & Gas

Instructor(s): M. A. Mian, Dr. Qamar J. Sharif or Jenny Spalding

The oil and gas industry employs people with diverse skills, experience and academic backgrounds. But recent studies have shown that key decision-makers are not always familiar with the sector's technical operations, commercial drivers or the complex jargon and terminology used. This means that industry risks are often not fully understood, which could be very damaging for your business.

The 3-Day course is an entry-level course designed for those seeking business advantages. There are non-technical personnel in the companies (legal, finance, HR, HSE, marketing, IT, non-geoscience and administration etc.) who are not at all familiar with how the industry functions and the drivers behind it. On the other hand, there are many other businesses that are providing services to the oil and gas industry (accounting firms, stock brokers, legal firms, recruitment agencies, project management, and secretarial services and so on) that are also foreign to the day to day operations of the industry. This course, designed in simple layman terms, covers the upstream (exploration and production), mid-stream and downstream sectors of the industry. It's aimed at non-technical people within exploration, production, refining and service companies, as well as professional advisors, investors and suppliers.

You'll gain insight into current issues, industry terminology, how money flows through the entire business chain, how different parts of the business interact with each other and with other companies, as well as with external investors.

What will this course cover?

The course will serve as an orientation to the oil and gas industry. It will provide the jargon used in the industry, the disciplines involved in finding the oil and gas and bringing all the way to the consumer. The steps in finding oil and gas, drilling for oil and gas, field development, production, processing of the products, transportation, and storage etc. will be covered. The course will also cover the commercial side of the business.

What will you learn?	Who will benefit
On completion of this course you will be able to fully understand the following: • Gain a comprehensive overview of petroleum and gas industry operations • Confidently master the technical terms: enhance your credibility with colleagues and clients • Explore the latest issues in exploration, drilling, production, transportation, storage, product prices, price risk management, world legal systems, economics and much more • Understand the energy value chain – from prospect to the burner tip • Evaluate the major costs, risks and uncertainties in oil and gas markets and projects calculate the maximum sustainable capacity. • Explore future trends and innovations	The following oil & gas company personnel will benefit from the knowledge shared in this course. • Planning managers • Non Geoscience engineer • Analysts • Commercial managers • Economists, bankers and stock brokers • Government officials • Business advisors • Asset managers • IT, HR and HSE personnel • Finance, accounting, auditing, taxation and legal personnel • Administrative secretaries

DAY 1	DAY 2	DAY 3
General Industry Overview & Basic Concepts • Meaning of Petroleum • Typical oil & gas company objectives • Typical oil & gas company activities • Industry streams • Typical organization chart • Company structures • Petroleum utilization **Oil and Gas Geology** • Origin and formation of petroleum • Migration of oil and gas • Requirements for hydrocarbon accumulation • Hydrocarbon traps • Structural trap • Stratigraphic trap • Geological time scale • Typical stratigraphic column • Types of hydrocarbons • Classification of crude oil • Classification of natural gas • Typical natural gas composition • Properties of gases **Oil and Gas Prospecting (Exploration)** • Geological prospecting • Geophysical prospecting • Seismic (2D & 3D) acquisition • Seismic Processing • Seismic interpretation • Offshore seismic data acquisition • Onshore seismic data acquisition • A seismic section • Stratigraphic cross sections • Reservoir mapping **Drilling Operations** • Exploration, delineation, appraisal and development drilling	**Formation Evaluation & Well Completion** • Evaluating a well • Whole core and core plugs • Open hole logs • Cased hole logging • Transient well tests **Well completions** • Well completions • Barefoot and single well completion • Dual well completion • Perforating a well • Reservoir stimulation **Reservoir Depletion Mechanisms** • Solution gas-drive reservoirs • Gas-cap drive reservoirs • Water-drive reservoirs • Combination drive reservoirs **Oil and Gas Production Facilities** • Typical oil production facilities • Artificial lift systems • Purpose of crude treatment • Separating and treating well fluid • Treating natural gas • Gas processing • Gas added value products • Offshore facilities **Transportation** • Transporting petroleum fluids • Pipeline tariffs **Maintenance of Oil and Gas Facilities** • Well servicing and workovers • Corrosion and how to avoid it **Oil and Gas Reserves** • Reserves estimating methods and classification • Oil and gas reserves estimates • Volumetric calculations	**Crude Oil Refinery Products & Processes** • Crude oil refinery • Refinery configuration • Refinery yields by crude type • Refinery margins • Refinery margin calculations • Factors affecting refinery margin **Legal Framework of the Industry** • The need for collaboration • International agreements • Parties to petroleum agreements • Contractual arrangements • Contract documents • Upstream project agreement • Government take • Optimal government take • Comparison of fiscal systems • Flexible fiscal regimes • Why dynamic terms? • Joint venture contracts • Risk service contracts (Iranian buyback) • Concessionary system's cash-flow • Production sharing system's cash-flow **Project Economics** • Data required for economics • Cash-flow projections • Operating expenditure (OPEX) • Typical decision yardsticks • Characteristics of ideal yardsticks • Sample before-tax cash-flow • Discounted payback period • Net present value • Internal rate of return (IRR) • Profitability index and present value ratio • Unit technical cost (UTC) or long-run marginal cost (LRMC) • Investment types

• Drilling contracts • Different types of Wells • Horizontal well technology • Routine drilling operations • Components of rotary rig • Rig's circulating system • Functions of drilling mud • Rig equipment • Drill pipes versus coil tubing • Rotary drill bits • Rotary core and casing drilling • Schematic of a cased well • Classification of casing • Functions of casing • Functions of cement • Offshore drilling • Mobile offshore drilling rig • Well control • Special drilling procedures • Breakdown of drilling costs • Authorization for expenditure (AFE) • Technological advances	• Decline curve analysis • Economic limit • Reserves replacement ratio **Maximize Ultimate Oil Recovery** • Reservoir management • Recovery sequence • Typical well locations in gas-cap drive reservoir • Coning of gas from the gas cap	• Types of investment decisions • Investment decision-making • Service producing investments • Uncertainties in oil and gas investments • Accounting for uncertainties • Sensitivity analysis **Oil Price Risk Management** • What is oil price risk management? • Physical/cash market • Forward trading • Futures trading • Options contracts • Sample future prices & option quotes

Downstream

3 Day

International Oil Supply & Trading

Instructor: Syed Hasnain

This 3-Day course is designed to provide an overview of the physical aspects of international downstream operations covering refinery economics and global supply and trading in both crude oil and refined products. It will offer effective training one can get for handing and managing commercial oil operations in oil refineries and marketing operations. The course will cover all aspects of international business starting from Well head to Wheels, i.e. crude oil production, refining, transportation, sales, supply, shipping, trading, and marketing and risk management. The course is designed on numerous case studies and problem solving using real-life examples which generally emerge in oil companies.

This course will bridge the gap between theory and practice and provide necessary skills in understanding the physical aspects of refining and marketing. It will also cover how commercial designs are made in various business units to optimize refining business in a commercial environment.

What will this course cover?

The morning sessions will mostly be made up of lectures, which will emphasize the theoretical aspects of various functions involved in refining and marketing operations and international oil trading. The afternoon sessions will concentrate on case studies and solving problems based on the theories learned in the morning sessions.

What will you learn?	Who will benefit
On completion of this course you will be able to fully understand the International Oil Supply & Trading: • Overview of global oil business • Global supply/demand balance • Impact of refining operations and economics • Products GPW and refining measures • How crude oil and product markets are structured • Crude and products pricing • Marine transportation and shipping economies • Supply and trading margins • Risk management and hedging techniques • Negotiating oil sales/purchase contracts	The following oil & gas company personnel and personnel of companies providing services to oil & gas companies will benefit from the knowledge shared in this course. • Oil and Gas Engineers • Planning Engineers • Marketers and Traders • Business Analysts • Product Managers • Banking and Government officials • Finance and Accountant Analysts • Risk managers • Engineering companies • Procurement and Sourcing • Investors

DAY 1	DAY 2	DAY 3
Overview of Global Downstream Business • Global Supply/demand balance • Overview of refinery operations • Impact of refining configuration on economies • Crude oil types and characteristics • Crude oil yield and GPW • Products specification and its significance • Products blending (gasoline, gas oil and fuel oil) • Calculation of refining margins • Introduction to petrochemicals • Commercial aspects of refining planning **Case Study** Assessing three different refinery configurations and their impact on refinery profitability. The attendees will learn which configuration and mode of operation will yield the highest refining margins while selecting the best crude and feedstock. **Problem Solving** Calculating gross refining margins for different crudes for base load and incremental crude runs and identifying optical mode of operations. The analysis identifies whether to make or buy any specific product to meet products' supply commitments.	**Supply, Transportation and Trading** • Market structure and regional enclaves • Global trade flows • Crude oil and products pricing • Light/Heavy and Sweet/Sour differentials • Role of exchange and benchmarks • Marketing, Supply and Trading • Supply delivery modes (FOB, C&F and Ex-Ship) • Freight economies and ship chartering • Tanker operations and voyage economics • Calculating trading margins • Arbitrage trade and backhaul economics • Cargo operations and documentation **Case Study** Running simulation model for a typical supply and trading organization to maximize refining profitability and trading margins under different pricing scenarios and market conditions **Problem Solving** 1. How to analyze global trade patterns 2. How price reporting agencies assess daily spot prices 3. How crude oil grades can affect refining margins 4. How shipping market functions and how voyage cost is calculated	**Global Refining, Supply and Trading** • Back-to-back trading • Products swap and time exchange • Back hauling economics • Crude processing deals • Role of brokers, inspectors and Middle man • Sale/purchase contracts • Introduction to risk management • Basic hedging techniques • Handling claims and disputes • Global oil market outlook – short/long term • Role of OPEC and energy Geopolitics **Case study** Analyzing tools and techniques for maximizing trading margins through swap, time exchange and back hauling. The 2nd case study will focus on developing crude processing deals. The 3rd case study will analyze how trading risk is managed through hedging using future contracts

3 Day

Commercial Aspects of Oil Refining

Instructor: Syed Hasnain

This 3 Day is designed to provide an overview of crude oil and refining process covering physical and commercial aspects of refinery operations and economics.

The course will offer effective and practical knowledge of commercial parameters in oil refining and trading. It will make attendees understand how crude supply and products trading can improve refining margins and how commercial decisions are made for refinery economics and planning.

The course material covers refining process, refinery economics, crude selection, oil pricing, supply and trading, marine freight, and project economics using real-life examples generally practices in refining and marketing organizations.

Bridging the gap between theory and practice, this course will provide you with the necessary skills in understanding physical aspects of refining and marketing and how commercial decisions are made in various business units to optimize refining business in a commercial environment.

The morning sessions will mostly be made up of lectures emphasizing theoretical aspects of various functions involved in refining and marketing operations, while the afternoon sessions will concentrate on case studies and solving problems based on theories learned in the morning session.

What will this course cover?

The key objective of this course is to give attendees a basic knowledge of refining commercial business. It will enhance participants understanding through active discussions and using real life examples of how refineries are commercially operated, and how margins are maximized using trading tools. It will help participants understand how market functions work and how refinery profitability can be enhanced through operating parameters and exploiting market conditions.

What will you learn?	Who will benefit
On completion of this course you will be able to fully understand the International Oil Supply & Trading: • Fundamental principles of refinery operations and economics • Refinery configuration and its impact on economics • Calculation of feedstock cost and refining margins • How crude oil and product markets are structured • How refining operations are optimized • Calculating freight cost and voyage economics • Arbitrage trade and calculating trading margins • Negotiating oil sales/purchase contracts • Managing cargo operations and documentation • How to develop and operate business plans	The following oil & gas company personnel and personnel of companies providing services to oil & gas companies will benefit from the knowledge shared in this course. • Oil and gas engineers • Planning engineers and managers • Marketers and traders • New entrants to the downstream oil functions • Business analysts • Product managers • Banking and government officials dealing with petroleum downstream • Finance and accounting analysts • Procurement and Sourcing • Investors

DAY 1	DAY 2	DAY 3
Overview of Refining Process and Operations • Introduction to refining process • Overview of refinery operations • Refining operations • Refinery configuration • Impact of configuration on economics • Refinery operating cost • Crude oil types and characteristics • Crude selection and types of feedstock • Products yield and GPW • Calculation of refining margins **Case Study** Assessing three different refinery configurations and their impact on refinery profitability. The attendees will learn which configuration and mode of operation will yield the highest refining margins while selecting the best crude and feedstock. **Problem Solving** Calculating gross refining margins for different crudes for base load and incremental crude runs and identifying optical mode of operations. The analyses identify whether to make or buy any specific product to meet products' supply commitments.	**Refining Economics & Planning** • Introduction to refined products • Products grade and classification • Products specification and its implication • Products blending (gasoline, gas oil and fuel oil) • Gross, variable and cash margins 3-2-1 crack speed • Refinery economics and planning • Developing operating and business plans • Project economics and cash flow • Refinery investments **Case Study** Developing optimal product mix and crude throughput levels for a typical refinery from a range of crude oil grades which will maximize profits under different pricing scenarios. The attendees will also learn how to evaluate refinery projects and cash flow projections from refinery investments. **Problem Solving** 2. Calculate 3-2-1 crack spread under different crude and pricing environments and making commercial decisions for selecting crudes and refining operating modes 3. Running simulations for products blending, including octane/economics for gasoline and cutter stock for fuel oil. Attendees will also learn how to minimize economic penalty for quality giveaways.	**Global Refining, Supply and Trading** • Overview of global refining • Physical oil markets • Market structure and regional trading hubs • Crude oil and products' pricing • International oil supply and trading • Cargo delivery modes (FOB, C&F, Ex-Ship) • Products arbitrage trading • Shipping and freight economics • Cargo nominations and operations • Price exposure and risk management • Principles of hedging • Oil contracts and its implications of commercial terms **Case study** Running an interactive simulation for crude oil and products trading involving different pricing structures and various delivery modes in a real world. The attendees will also learn how spot barrels are traded and how arbitrage trades are done. The second case study will focus on shipping economics and cargo operations and how economies of scale in shipping can affect trading margins. **Problem Solving** 1. Market structure and its implications on storage economics 2. Calculation of netback pricing 3. World scale and voyage costing 4. Managing trading risk using future contracts and hedging techniques 5. Analyzing oil contracts from commercial aspects

3 Day

Crude Oil Evaluation, Economics & Pricing

Instructor: Syed Hasnain

This 3-day course is designed to provide an overview of crude oil characteristics, its value in different refining configuration and pricing assessment in global oil markets. The course will offer attendees an effective and practical knowledge of how different crude oil grades are worth to different refiners and how they are commercially valued and traded. The course will cover all important benchmarks crudes and other key grades which are openly traded in global markets. The focus will be mainly on Brent crude covering physical, futures and forward markets including hedging and risk management. The course will also touch on key elements of marketing, supply and trading including marine transportation and freight economics. The course material covers production, separation, storage, processing, evaluation, pricing, competitive analysis, sales, supply, trading and contract negotiations.

Course Methodology

The course would bridge the gap between theory and practice and provide necessary skills in understanding physical and commercial aspects of crude oil to refiners. It will instill the basic concept and key factors which are relevant for any crude in ascertaining its true value in a commercial and dynamic environment. The morning sessions will cover mostly lectures emphasizing theoretical aspects while the afternoon sessions will concentrate on case studies and solving problems based on theories learned in the morning session.

What will you learn?	Who will benefit
On completion of the course, you would be able to learn and understand: • Overview of crude oil production • Crude oil types and characteristics • Understanding significance of light/heavy and sweet/sour crudes • Crude oil evaluation and assessment methods • Crude oil pricing and competitive analysis • Role of Brent market and other benchmarks • Physical, Futures and Forward markets • Crude oil sales, supply/trading and contract negotiations • Developing operating and business plans	Technical and non-technical professionals from oil & gas industry and business and financial institutions, who wish to understand in a simple and jargon-free language the physical aspects of crude oil sales, supply and trading business. Those who want to gain commercial insight of how crude oil is converted into different refined products and how they are priced/valued in open markets for supply and trading. • Oil and Gas Engineers • Planning Engineers / Managers • Oil Marketing Managers / Traders • New Entrants to Refinery or Petroleum industry • Business Analysts • Banking and Government Officials • Finance and Accounting Analysts

DAY 1	DAY 2	DAY 3
Overview • Introduction to oil industry • Overview of global crude supply/demand • Introduction to crude oil production **Crude Oil Characteristics** • Crude oil characteristics • Benchmark crudes • Significance of light/heavy and sweet/sour crudes • Crude, condensate and other feedstocks **Crude Oil Refining** • Fundamentals of refining process • Refinery configuration • Refining margins • Refining operations and optimization • Impact of configuration on refining economics **Exercises / Case Study**	**Evaluating Crudes** • Crude oil evaluation, selection and assessments • 3-2-1 crack spread • Understanding refined products **Pricing Mechanism** • Introduction to crude oil pricing • Introduction to products pricing • Physical markets and regional hubs • Role of Exchange and Benchmark • Understanding Brent and North Sea crude markets • Understanding dynamics of US domestic and Canadian crudes **Crude Oil Trading** • Physical, Forward and Futures markets • Price exposure and risk management **Exercise / Case Study**	**Crude Oil Trading (Cont'd)** • Specifics of physical oil trading • International crude oil trading **Crude Oil Transportation** • Crude supply and transportation • Marine freight and economics • Backhaul supply economics • Crude processing deals **Crude Oil Contracts** • Crude oil contract negotiations • Types of oil contracts - legal and commercial implications • Regional market dynamics • Role of OPEC and geopolitics • Developing crude oil supply plans **Exercise / Case Study**

3 Day

Marine Transportation: Operations, Economics and Logistics

Instructor: Syed Hasnain

This 3-day course is designed to provide an overview of shipping industry and practical aspects of tanker operations, chartering and logistics. The course will offer attendees an effective and practical knowledge of how voyage costs and estimation are done for oil tankers and dry cargo ships. The course will cover all important features of chartering covering loading and discharge operations including lay time and demurrage calculations. The focus will be mainly on voyage economics for oil supply and trading purpose. The course will also touch on key elements of tanker classification, main shipping routes, canal transit, charter party agreements, and role of brokers and cargo inspectors.

Course Methodology

The course would bridge the gap between theory and practice and provide necessary skills in understanding technical and commercial aspects of shipping operations. It will instill the basic concept and key factors which are relevant in shipping industry for calculating the freight cost, voyage economics and loading/discharge operations. The morning sessions will cover mostly lectures emphasizing the theoretical aspects while the afternoon sessions will concentrate on case studies and solving problems based on theories learned in the morning session.

What will you learn?	Who will benefit
On completion of the course, you would be able to learn and understand: • Ships types and characteristics • Charter Party Agreements • Understanding lay time, lay can and lay days • Using the World scale Book • Freight cost calculation and voyage economics • Cargo loading and discharge operations • Demurrage and dead freight calculations • Freight market - spot fixtures, bare boat and time charter • Ship/Shore difference, insurance coverage, claims and disputes	Technical and non-technical professionals from oil & gas industry and business and financial institutions who wish to understand in a simple and jargon-free language the physical aspects of crude oil and refined products supply via marine transportation. Those who want to gain commercial insight of shipping industry and knowing how freight costs and voyage economics are calculated for making commercial decisions in oil supply and trading. • Oil and Gas Engineers • Planning Engineers / Managers • Oil Marketing Managers / Traders • New Entrants to Shipping or Petroleum industry • Business / Commercial Analysts • Banking and Government Officials • Finance and Accounting Analysts

DAY 1	DAY 2	DAY 3
Shipping Industry • Introduction to shipping industry • Global oil markets and tankers role in supply/trading • Ship sizes, categories and characteristics **Freight Market** • Understanding freight market • Introduction to Worldscale Book • Basic elements of charter parties • Types of charter party • Tanker chartering practices • Chartering for crude oil • Chartering for refined products • Chartering for solvents and chemicals • Fixture negotiations • Post fixture problems **Exercises / Case Study**	**Freight Cost & Economics** • Freight cost calculation • Voyage economics - tanker • Voyage economics - dry cargo **Operations** • Port operations and role of Ship Agents • Tanker operations - nominations / scheduling • Cargo operations - loading / discharge **Cargo Specifications** • Cargo delivery mode • Cargo documentation • Ship/Shore difference • Understanding laydays, laycan and laytime • Demurrage and Dead freight calculations **Exercise / Case Study**	**Freight Market** • Freight market structure • Freight assessment - Baltic Exchange and LTBP • Maritime fraud • IMO regulations • Role of P&I club • Oil supply and trading • Contract of Affreightment • Backhaul supply economics • Dispute, Claims and Insurance • Global routes and chartering hubs • Suez canal transit / Sumed pipeline **Exercise / Case Study**

3 Day

Petroleum Refining for non-Technical Persons

Instructor: Syed Hasnain

This 3-day course is designed to provide an overview of basic refining process, operations and configuration in a non-technical language. The course will offer attendees an effective and practical knowledge of crude oil processing in refineries and how different processing units and configuration affects the profitability of a particular refinery. The course will demonstrate the importance of various process functions and unit operations required for maximizing the refining margins under different feedstock. The course material covers refining process, unit operations, plant configuration, crude characteristics, crude selection, refined products, products grade and specifications, supply trading and marine freight using real life examples generally practiced in refining and marketing organizations.

Course Methodology

The course would bridge the gap between theory and practice and provide necessary skills in understanding physical aspects of refining to marketing and supply organizations. It will instill the basic concept and key factors which are relevant for refineries to operate in commercial and dynamic environment. The morning sessions will cover mostly lectures emphasizing theoretical aspects while the afternoon sessions will concentrate on case studies and solving problems based on theories learned in the morning session.

What will you learn?	Who will benefit
On completion of the course, you would be able to learn and understand: • Fundamentals of refinery process • Different processing units and its functions • Plant configuration and its impact on economics • Crude oil characteristics • Criteria of selecting feedstock • Calculation of feedstock cost and refining margins • How refining operations are optimized? • Refining planning and scheduling • Developing operating and business plans	Technical and non-technical professionals from oil & gas industry and business and financial institutions who wish to understand in a simple and jargon-free language the physical aspects of commercial refining including supply/trading and who want to gain commercial insight of how crude oil is converted into different refined products and how they are priced/valued in open markets for supply and trading. • Oil and Gas Engineers • Planning Engineers / Managers • Oil Marketing Managers / Traders • New Entrants to Refinery or Petroleum industry • Business Analysts • Banking and Government Officials • Finance and Accounting Analysts

DAY 1	DAY 2	DAY 3
Introduction • Introduction to oil industry • Chemistry of petroleum • Integration of refinery with oil industry **Crude Oil Characteristics** • Distillation curves • Composition • Fractions • Cutting crudes • Gravities / Sulfur content **Fundamentals of Refining Process** • Atmospheric Distillation • Vacuum Distillation • Catalytic Reforming • Hydrocracking • Cat Cracking • Alkylation **Residue Reduction** • Thermal Cracking • Coking • Visbreaking • Hydro-treating and Sulfur Plants • Ethylene Plants **Exercises / Case Study**	**Introduction to Refined Products** • LPG • Naphtha • Gasoline • Jet Fuel • Diesel • Fuel Oil • Asphalt • Lubes • Solvents • Products grade and classification • Products specification and its implication **Products Blending** • Gasoline blending • Diesel blending • Fuel oil blending • Crude oil, Condensate and Natural Liquids • Fuel Values - heating content • Petrochemicals • Derivatives and other special chemicals **Exercise / Case Study**	**Refinery Configurations** • Simple refinery • Simple and Complex Refineries • Impact of configuration on economics • Refinery operating cost • Product yields and GPW **Refinery Margins** • Gross refining margins • Net refining margins • Factors affecting refinery margins • 3-2-1 crack spread • Refinery economics and planning • Physical markets and trading hubs • Oil pricing and role of benchmark • Developing refinery operating and business plans • Project economics and cash flow **Exercise / Case Study**

Leadership

5 Day

Principled Inside-Out Leadership – The Power of Authentic Influence

Instructor(s): Dr. Gerhard Van Rensburg

Principle-based leadership simplifies and grounds the multifaceted concept of leadership in the range of principles that guide leaders' thinking, behaviors and approaches to the task of leading. It stems from the belief that leaders grow their effectiveness and influence by internalizing key principles. Awareness of the principles and the lack of their practical application in the various situations that require leadership, challenge the leader's commitment to further development. It can be described as an inside-out leadership. It engages the leader's belief and value system as opposed to merely teaches theory, models and tactical approaches.

Three areas are equally important in the development of a leader:

- What the leader models in his/her person (leading self)
- The direction the leader is able to give (leading change)
- The level of engagement and commitment the leader is able to get from others (leading others)

The purpose of the course is to give participants insight into the principles that leadership is built on and help them engage with the various themes through the introduction of theories, models and ideas, as well as facilitated reflection.

What will this course cover?

The course provides a broad, but deep base for 21st century leadership in all different contexts in need of strong holistic leadership.

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What will you learn?	Who will benefit
During this comprehensive study program, you will learn: • Insight into leadership as it is based on principles in the areas of personal mastery (leading self), giving direction in an organizational context (leading change), and engaging and mobilizing people (leading others/teams); • Knowing themselves better and living with higher levels of awareness in terms of their internal challenges and how they relate to effective leadership; • The ability to practice inside-out (authentic) leadership with a higher degree of insight and skill; • The improved ability to identify when and where leadership is lacking and know how they can contribute with their own leadership; • Growth in their leadership effectiveness, knowing what to look for, reflect on and act on.	Corporate leaders at all levels from middle management to executive levels.

DAY 1	DAY 2	DAY 3
Leading Self – Principles (11) The leadership 'table of influence' rests on three legs (a) Leading self, (b) leading change and (c) leading others. First and foremost the leader grows his leadership by learning to lead himself well. No-one will dispute the importance of the leader's example in getting the support of others. Much of the good work that some leaders do through their natural abilities and skills, get undone by a poor example of character and personal behavior. The leading self-principles give answer to followers' question: what will you model to me? • Introduction to inside-out leadership • Differentiating management and leadership • A holistic leadership development model • Leading self - Intrinsic foundation • Authenticity, Passion, Self-regard and Character	**Leading Self - Continued** • Leading self - personal competencies • Self-confidence • Self-awareness • Self-motivation • Self-discipline • Self-initiative • Perseverance • Life-balance and resilience	**Leadership Change – Principles (8)** To lead is to take the first step into the unknown. It is to make new paths with a desired destination in mind. Leading the change towards something better implies giving direction. There are important principles to build one's strategic leadership. They are of a systemic nature and require holistic thinking. The leading change principles answer the followers' question: what is our destination and how will we get there? • Understanding the change dynamic • Adaptability • Trend- and systems awareness • Organizational awareness • Visionary thinking • Strategic thinking • Cultural awareness • Technology awareness

DAY 4	DAY 5
Leading Others – Principles (13) In leadership it is not about the efforts of an individual but the success of the team. If a leader fails in obtaining the voluntary support of others and mobilizing them, he will only be a leader in name. Many important principles need to be respected and guide the leader in his efforts to effectively engage others and influence them. Followers only give their full support if the leader can explain and demonstrate how he will engage every member of the team. Leading others - Laying the foundation for teamwork • Connecting with others • Building relationships • Being servant • Building support • Communication • Building team • Building trust	**Leading Others – Leadership Practices** • Leadership style • Recognition • Empower • Decision making • Honesty and integrity • Inspiring hope

Instructors' Biographies

M. A. MIAN, P.E.

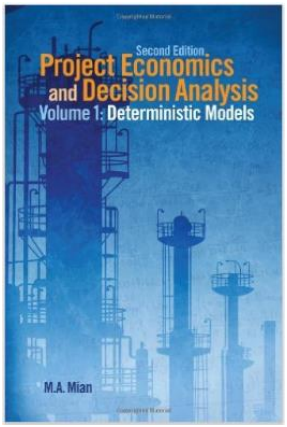
Mian is a Sr. Petroleum Engineering Consultant with Saudi Aramco in Dhahran, Saudi Arabia. He has previously worked with Qatar Petroleum (Doha, Qatar), ZADCO (Abu Dhabi, UAE), Euratex Corporation (Colorado, USA), Keplinger & Associates (International Energy Consultants in Colorado, USA), and as Independent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

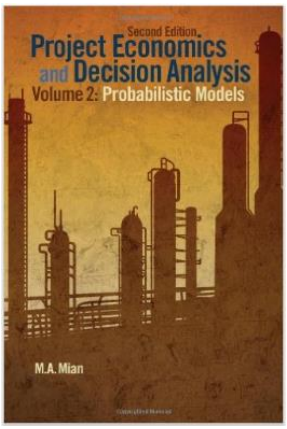
Mian has **35 years** of diversified experience in petroleum engineering, reservoir engineering, project economics and decision analysis. He had been involved in evaluating multi-billion dollar oil and gas field development, LNG, GTL, Aluminum smelter, refinery, petrochemical, power and production sharing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





EDUCATION

- B.Sc Mechanical Engineering
- M.Sc Petroleum Engineering, Colorado School of Mines, Golden, CO, USA
- M.Sc Mineral Economics, Colorado School of Mines, Golden, CO, USA

PORTFOLIO OF COURSES

- 5-Day – Project Economics, Risk & Decision Analysis
- 5-Day – Designing Efficient Oil & Gas Fiscal Systems
- 3 Day – Advanced Project Economics, Risk & Decision Analysis
- 3-Day – Economics of Production Sharing Agreements
- 3-Day – Development & Economics of Unconventional Resources
- 3-Day – Fundamentals of Oil & Gas
- 3-Day – Decline Curve Analysis, Diagnostic Methods and Performance Forecasting

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 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.

Dr. QAMAR J. SHARIF

Dr. Sharif is a petroleum engineering specialist with Saudi Aramco. He has over 35 years of practical experience in the oil and gas industry, including academia. He has diversified background in drilling, workover and completion operations, research, technology development and implementation, field development planning, well cost estimation, contracts and contracting strategy for oil and gas operations. He started his career on a steam-powered rig as a trainee drilling engineer in 1980. He worked as Assistant driller, driller and tour pusher on offshore drilling rigs in Abu-Dhabi, U.A.E.

After working 11 years in operations he joined graduate school and earned his MS and PhD in Petroleum Engineering from Texas A&M University, College Station, Texas. He has a unique blend of hands-on field operations and academic knowledge. He worked with Shell International Exploration and Production (SIEP) in Houston and was a recipient of the Shell President Award for premier performance for design and implementation of multi-string steam injection well design at Bakersfield, California.

Dr. Sharif has been involved in new joint ventures startup, product line development, commercialization strategy for Enventure GT, an Expandable Tubular Company (a JV between Shell and Halliburton). He deployed the first expandable casing, downhole.

He worked with Shell Nigeria, Farcodus Yokri Project, Warri and reduced well completion time by more than 50% for dual completions. He has expertise in developing novel ideas and transforming them into robust and practical solutions. He has been teaching stuck pipe prevention and lost time reduction course and conducted an awareness campaign for offshore drilling department. He has been involved in teaching undergraduate and graduate courses at King Fahd University of Petroleum and Minerals (KFUPM), Petroleum Engineering Department, Dhahran, Saudi Arabia. He brings out the best in his students.

He served as Curriculum Advisor - Well Construction discipline, representing Saudi Aramco with PetroSkills.

EDUCATION

- B.Sc Mining Engineering
- M. Sc Petroleum Engineering, Texas A&M University, USA
- PhD Petroleum Engineering, Texas A&M University, USA

PORTFOLIO OF COURSES

- Offshore and Deep Water Drilling
- Drilling Operations
- Stuck Pipe Prevention
- Drilling Operations Optimization
- Advanced Drilling Engineering
- Drilling Hydraulics Design

PUBLICATIONS

- Fiber Glass Lined Tubular as completion string for corrosion protection
- Application of Drilling-with-Casing (DwC) Technology
- Meeting Economic Challenges of Deepwater Drilling With Expandable Tubular Technology
- Strategic Cost Leadership - reduction of completion time by more than fifty percent
- Probability of getting stuck while drilling and probability of freeing the pipe, if stuck
- Unconventional Methods for Shallow Water Flow Conductor Installation
- Carbonated Water Imbibition Flooding for fractured reservoirs

COURSES DELIVERED IN

Cambodia, Australia, Singapore, Kuala Lumpur, Dubai, London, Houston, Mexico and Saudi Arabia

Dr. SALMAN GHAURI

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.

EDUCATION

- MA Economics, University of Waterloo, Canada
- M.Sc Mineral Economics, Colorado School of Mines, Golden, CO, USA
- PhD. Mineral Economics, Colorado School of Mines, Golden, CO, USA

PORTFOLIO OF COURSES

- 5-Day – Project Economics, Risk & Decision Analysis
- 5-Day – Global Energy Economics & Petroleum Projects Evaluation
- 3 Day – Advanced Project Economics, Risk & Decision Analysis
- 3-Day – Production Sharing Agreements

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?"
- Assessing LNG as a potential catalyst to address - Europe's natural gas supply challenges.
- Forecasting Natural Gas Prices using Cointegration Technique
- How most recent events alters expectations – A case of oil price forecasting

COURSES DELIVERD IN – Italy, Calgary, Nigeria, Dubai, Pakistan

SYED S. HASNAIN

Syed was a Senior Marketing Manager in International Operations of Saudi Aramco Corporate HQ and recently retired. He served Saudi Aramco as the Group Head of North American markets for coordinating crude oil sales, supply and strategic planning. An international downstream veteran with more than **35 years** of high profile expertise in technical and commercial operations of crude oil and refined products with major emphasis on refinery economics, sales, marketing, supply, trading, logistics, contract negotiations, joint venture due diligence, business development and strategies. Syed has effectively interfaced with senior management in bringing innovative ideas and remained instrumental for enhancing corporate profits from sales and supply of integrated and complex refining and marketing system of 2.5 million barrels per day (MMBOD). His contributions and areas of expertise for enhancing downstream profitability were as follows:

- Regularly analyzed global market dynamics for recommending oil prices and optimizing refineries crude oil slate and operating plans.
- Conducted due diligence on several downstream projects for investments, business development and strategies to ascertain optimal portfolio fit.
- Developed Crude Oil Evaluation Model to assess competitive values of 37 crude oil grades which are actively traded in global oil markets. The mode was used for recommending oil prices.
- Analyzed global freight market and competitive voyage routings via Suez/Cape for long haul crude transportation to Europe and North America and negotiated new freight formula with Oil Majors.
- Developed and optimized short and long term refinery operating plans for multiple refineries integrated under one corporate umbrella.
- Conducted due diligence on JV refining operations and negotiated crude oil and products' transfer prices with ExxonMobil and Shell.
- Developed crude processing deals with independent refiners in Singapore, Korea and Italy.
- Developed AG Bunker market from a grass root level by positioning a VLCC floating storage.

EDUCATION

- B.Sc Chemical Engineering
- MBA Master of Business Administration

PORFOLIO OF COURSES

- Refinery planning, scheduling and optimization
- Commercial Aspects of Oil Refining
- International Oil Supply and Trading
- Fundamentals of Petroleum Downstream

PUBLICATIONS

- Reducing OPEC crude production and impact on global markets
- Bifurcation of European crude pricing
- Dynamics of changing Asian crude marker
- How much Middle East crude supply for the US?
- Implication of Middle East Refining capacity increase on global trade flows.

JENNY B. SPALDING

Jenny Spalding is a Petroleum Engineering Specialist with Saudi Aramco Services Co. She has more than **35 years** of experience in petroleum engineering, energy economics and corporate project economics. She has been involved in evaluating multi-billion dollars oil and gas field projects, the economic impact of energy pricing policies, and oil and gas reserves. She has worked for Saudi Aramco, Aramco Services Company, The World Bank, Shell and CERA and has authored papers for the World Bank, Saudi Aramco, and CERA. Her primary expertise is in petroleum project economics, portfolio and reserves assessment. She is a registered professional engineer in Louisiana.

Specific projects Ms. Spalding has been involved with include (a) being part of a Saudi Arabian Task Force to assess the economic impacts of energy pricing policies, (b) customer demand, cross subsidy effects and product price elasticities, (c) member of the Ghawar task force to analyze ways to increase ultimate recovery across the field areas, (d) prepared trend analysis of all new oil and gas production in Saudi Arabia to evaluate production across all Saudi Aramco fields and reservoirs to optimize production, and (e) was part of the Kingdom's reserves assessment team.

While with the World Bank, Ms. Spalding was engaged in (a) policy discussions with the Indian Government to reconcile domestic fuel and feedstock pricing and electricity pricing subsidies, (b) led a task force to Egypt to across cross subsidies between fuel substitutes and (c) coordinated the Global Environmental and Energy fund (GEF) for Eastern Europe. With CERA, Ms. Spalding authored numerous private reports which modeled the future growth of non-OPEC oil, examine Shell's downstream options in South America, and evaluated the financial implications of the changing oil and gas pricing relationships. In recent years, Ms. Spalding has been heavily involved in Saudi Aramco's training initiatives, working to develop Saudi human resources in the petroleum business.

EDUCATION

- B.Sc Geological Engineering, Princeton University
- M.Sc Petroleum Engineering, Tulane University
- M.Sc Public Policy with a concentration in International Finance, Harvard University's Kennedy School.

PORTFOLIO OF COURSES

- Fundamentals of Oil & Gas
- Project Economics, Risk & Decision Analysis
- Reservoir Engineering & Reservoir Management

PUBLICATIONS

- Reservoir Management in Saudi Aramco: Leveraging Knowledge for the Future
- Saudi Economy in Perspective: (report issued for years 1995-1999)
- Increasing Private Sector Participation-Analysis of Saudi and Foreign Workforce
- Domestic Saudi Gas Policies: Cross subsidy effects and product price elasticity
- Energy Pricing Policies for Egypt: (White Paper)
- Eastern European Global Environmental Fund Outlook (Conference Paper, delivered Vancouver, 1989)
- The Future of Non-OPEC Oil
- The Developing Business and Politics of Oil in Latin America Reservoir Management in Saudi Aramco: Leveraging Knowledge for the Future
- Saudi Economy in Perspective: (report issued for years 1995-1999)

COURSES DELIVERED IN

Saudi Aramco's Upstream Professional Development Center (UPDC), Qatar, Dubai, Korea, London, Johannesburg, Ghana and Qatar.

Dr. M. A. CHOUDHURY, C. Eng.

Dr. Choudhury is an Instrument & Control System Engineering Consultant with Eco-Qatar in Doha, Qatar. He has previously worked with Qatar Petroleum (Doha, Qatar), Arabian Gulf Oil Company – ADNOC, (Abu Dhabi, UAE), Foster Wheeler Corporation (Reading, UK), Fisher Control (Leicester, UK) and British Iron and Steel Research Association (Sheffield, UK) . He is registered as a Chartered Engineer with UK IET Institute.

Choudhury has **37 years** of diversified experience in the Petrochemical, Oil and Gas processing plants, Automatic Well testing, Oil Refineries, Onshore/Offshore facilities, Sulphur handling/loading terminal, Instruments and Process Computer Systems Industries.

He has been involved in writing extensive documents regarding asset integrity related governance documents including policies, procedures and specifications. He has extensive experience with Honeywell TDC system, ABB control systems, Fisher/Rosemount, Provox system, Fieldbus Technology and other SCADA and PLC based computer systems. Additionally, he has been implementing HSE & Quality Assurance, Quality Control and Technical Audits related activities utilizing ISO 9000 and 10011 series Standards.

Dr. Choudhury was the pioneer of raising Y2K problem for QP (Qatar Petroleum) operational systems and was selected as a member of management team to supervise all QP Operations' control systems to make them Y2K compatible.

Dr. Choudhury is considered as a subject matter expert (SME) in Instrument and Control Systems. He has delivered courses on Instrument and Control Systems in various countries. He has always received excellent feedback, as an expert presenter, from the participants of his courses.

EDUCATION

- B.Sc (Hons.) in Systems and Control Engineering
- M.Sc. in Instrument and Process Control Engineering, Bradford University, Bradford, UK
- PhD in Instrument and Process Control Engineering, Bradford University, Bradford, UK

PORTFOLIO OF COURSES

- 5-Day – Fundamentals of Process Control Systems
- 5-Day – Basic Plant Instrumentation Design and Selection
- 3 Day – Hazardous Area Classification in the Petroleum Industry
- 3-Day – Practical Instrumentation Course related to Oil and Gas Industry

COURSES DELIVERED IN

United Kingdom, USA, UAE, Qatar, Pakistan & Libya

Dr. RAJAN N. CHOKSHI

Dr. Chokshi works as an artificial lift and production 'Optimizer' for Accutant Solutions, a consulting firm out of Houston, USA. He has over 30 years of work experience in petroleum and software industries. He has worked at ONGC of India, The University of Tulsa artificial lift projects, CEALC and ConnectShip (consulting and software firms) and Weatherford (a global service company) in a variety of roles from petroleum engineer, research engineer, software developer, project manager, trainer, senior consultant, and a senior business leader. He has worked on many petroleum and software projects globally in the areas of multi-phase flow, artificial lift, production optimization, well performance improvement and real-time production monitoring.

Dr. Chokshi has taught many courses and conducted workshops for practicing professionals around the globe in public and private forums. He has co-authored over fifteen SPE papers. He has led the development of a semester-long curriculum and taught for senior-level university students in artificial lift and production optimization at Texas Tech and Missouri S&T universities. He led and guided industry experts in developing digital content like animations, iPad app, iBooks and webinars. He has delivered several SPE webinars.

Dr. Chokshi was an SPE Distinguished Lecturer for the 2015-2016 year. He has co-chaired an SPE artificial lift workshop. He serves on the SPE global committees for training and for the production awards.

EDUCATION

- B.E. in Chemical Engineering, Gujarat University, India
- M.Tech. in Chemical Engineering, IIT, Kanpur, India
- Ph.D. in Petroleum Engineering, The University of Tulsa, OK, USA

SELECTED RECENT PUBLICATIONS

- Importance of Downhole Measurements, Visualization and Analysis in Producing Unconventional Wells
- Consideration for Optimizing Artificial Lift in Unconventional
- Service Industry & University Collaboration in Teaching Production Optimization with Artificial Lift
- Unified Mechanistic Model for Steady-State Two-Phase Flow: Horizontal to Vertical Upward Flow
- Experimental Study and the Development of a Mechanistic Model for Two-Phase Flow Through Vertical Tubing

PORTFOLIO OF COURSES

- 1-Day to 5-Days – Artificial Lift and Production Optimization
- 1-Day to 5-Days – Gas-Lift for Production Optimization
- 1-Day to 3-Days – Reciprocating Rod Lift
- 1-Day – Artificial Lift and Digital Oil Field
- 1-Day – Artificial Lift Selection for Shale and Tight Reservoirs
- 1-Day – Reciprocating Rod Lift for Shale and Tight Reservoirs
- 1-Day – Gas-Lift for Shale and Tight Reservoirs

COURSES DELIVERED IN

USA, UK, Canada, Mexico, Venezuela, Colombia, UAE, Kuwait, Saudi Arabia, Oman, Bahrain, Libya, India.

Dr. EMMANOUIL ION

Emmanouil Ion is a Compliance Specialist Adviser with extensive management experience gained in Wealth Management, Asset Management, Private Banking, AML/CTF/ABC Systems & Controls (SYSC), and Regulatory & Compliance Law Firms and Specialist Consultancy Firms over **20 years**. He is specialized in high-level management of multiple engagement teams operating in Reporting, Financial Sanctions, and Global Regulatory Activities (UK, U.S., EU, UN & International Standard Setting Bodies) fostering a culture of effective risk management and promoting institutional safety and soundness.

He is a former Senior Counsel, and has held high-level appointments including Specialist Adviser to an Egmont Group FIU for Financial Action Task Force (FATF) Regulatory Affairs. Emmanouil has participated in Capacity Building Projects; has held Senior Management appointments for financial, maritime, procurement, and defense companies; and has managed big projects for Specialist Consultancy engaging with reputable institutions such as, Halliburton, UBS, Central Banks & International Financial Institutions, ABB, Czarnikow Rionda, STAYER, Raytheon, FURUNO, MTU, RR, Mitsubishi, Caterpillar, Daewoo Heavy Industries, SATA, STOLT Tankers, UN Food Program.

Emmanouil's consultancy work is highly specialized in the creation of dedicated Sandbox environments for Qualitative Analysis (QA) for highly matrixed institutions and training academies; Threshold Setting & Tuning; Development & Execution of Efficient Scenario Setting; and Scenario Logic Validation for AML and Red Flag Gap Analysis involving large volumes of Big Data including sensitive data such as, Customer Data, Account Data, and Transaction Data.

Emmanouil holds 54 Certifications from the United Nations, United Nations Global Compact & UNODC, World Bank Group, Banker's Academy, HM Government, U.S. Department of Justice, National Institute of Justice, U.S. Department of Defense Security Service, and U.S. Department of Homeland Security. He delivers professional training courses in Law, Compliance, Governance, Risk Management, Negotiation, Leadership, Conflict Management, Crisis Management, Alternative Dispute Resolution, and International Relations.

EDUCATION

- BA International Relations
- M.Sc International Relations, London School of Economics (LSE), University of London, UK
- LLM International & Maritime Law, University of Hertfordshire, UK
- PhD. Law & Economic Crime, Institute of Advanced Legal Study (IALS), University of London, UK

PORTFOLIO OF COURSES

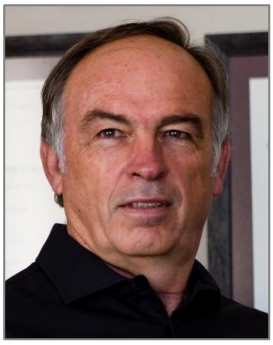
- 5-Day – Competitiveness & Corporate Social Responsibility
- 5-Day – Knowledge Exchange – Peer-to-Pear Learning/Exchange
- 5-Day – Managing & Shaping Change in the 21st Century
- 5-Day – Critical Leadership Skills for Technical Executives
- 3-Day – Fundamentals of Risk Management
- 3-Day – FEMA IS-00906, Basic Workplace Security Awareness
- 3-Day – FEMA IS-00915, Protecting Critical Infrastructure Against Insider Threats
- 3-Day – Insider Threat Awareness

PUBLICATIONS

- The Prestige Casualty and Resulting Initiatives in European and International Law, Ant. N. Sakkoulas Publishers, 2007
- Fundamental Principles of EU Law Against Money Laundering, Ashgate Publishing, 2014

COURSES DELIVERED IN

UK, Ireland, Spain, Portugal, Germany, Austria, Switzerland, Italy, Spain Hong Kong, Singapore, Japan, and Thailand.



Dr. GERHARD VAN RENSBURG

2015 Titans Building Nations Country winner in Education and Training (Private Sector)

Gerhard founded New Era Leadership and worked as a leadership and executive coach, development facilitator and academic supervisor since 2002. He holds a doctorate in leadership and organizational structures. He is currently an associate of The Da Vinci Institute for Technology Management (Pty) Ltd and one of Duke Corporate Education's network of global educators. He is a co-developer of the leadership development component of the National Human Resources Management Standards and certified as a PDA Analyst and MyPDA Coach. Since 2015 Gerhard is a director of the Future Leaders Africa online development journey.

Gerhard is well-known for his articles in the leadership field and is a column writer for the CEO magazine. He published two leadership books, The Leadership Challenge In Africa (foreword by Archbishop Desmond Tutu), and Leadership Thoughts. He is furthermore chosen by Motivational Press as one of their community of leading experts, thought leaders, and industry authorities. His articles were published in several leadership, management and human resources publications such as CEO, PMR, HR Future, HR.com and Business Brief.

His interventions include his sophisticated online leadership development program 32 Leadership Principles to Unlock Your Potential. His clients include MTN, Transnet, BASF, Ubank, Auto & General, Coca Cola Fortune, Media24, Saint Gobain, University of Johannesburg, Beckman Coulter and Avery Dennison. As an academic service provider for The Da Vinci Institute in their PhD Program, Gerhard teaches his SAQA accredited courses: The Leadership Challenge in Africa and 21st Century Leadership. He also serves as an external examiner of doctoral theses. Gerhard furthermore frequently delivers talks on leadership at various functions, conferences and summits. He was invited for interviews on radio talk shows such as Paying it Forward, Life Tips and Tough Talk Radio Network.

EDUCATION

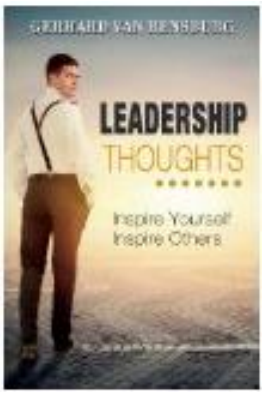
- BA (Hebrew and Philosophy)
- MCom (Leadership studies)
- MTh (Practical theology)
- DTh (Practical theology)

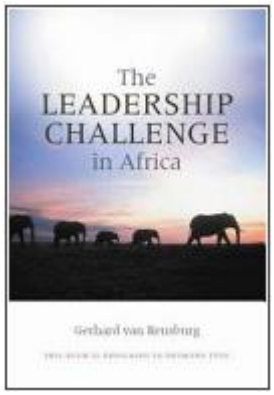
PORFOLIO OF COURSES

- The Leadership challenge in Africa
- Principled Leadership

PUBLICATIONS

- Books
  - The leadership challenge in Africa (foreword by Archbishop Desmond Tutu)
  - Leadership Thoughts – Inspire Yourself Inspire Others
- Acting on out purpose in life – action, the antidote to despair
- When to take on and when to let go
- The need for inclusive thinking
- Constructive conversations
- The cost of losing touch with humanity





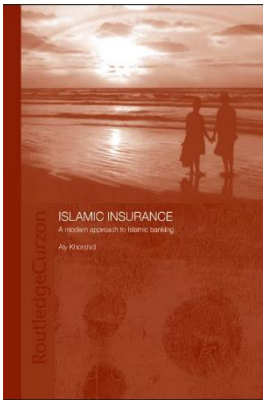
COURSES DELIVERED IN

South Africa & UK

Dr. ALY KHORSHI

Dr. Aly Khorshid is globally recognized Shariah Scholar and Islamic Finance consultant. He has been involved with Islamic financial institutions for over 2 decades; expert on Shariah compliant finance within the Islamic law, Waqf family "Trust", inheritance, capital market products, Fund Structure for global investment, Project finance, Due diligence, alternative finance and Islamic contracts.

Dr. Aly Khorshid is Sharia board member in selected Islamic institutions and served as wealth manager with several banks. In addition to the publications listed below, he is Joint author of several publications and many articles published on Islamic finance. He is a trustee member of Academy UK, fellow at ICMA center Henley Business School University of Reading UK, Diploma course director IFBL Luxemburg, Professor (Visiting) IBS, UTM University Malaysia, former visiting lecturer at El-Azhar University, Egypt, and visiting professor at Nile University Egypt. He was nominated for King Faisal International prize in 2006, runner-up for Mubarak Prize on Islamic studies 2010. He is a regular speaker on Islamic finance issues at conferences and TV. His current research interests are in developing Sukuk Waqf for development and education, Risk Management in Islamic financial institutions, developing new innovating products in financial engineering and developing practical Islamic stock trading & Shariah compliant capital market tools comparable with the global market. In addition to the following education, Dr. Khorshid also studied Fiqh and Shariah at Al-Azhar University (Egypt).



EDUCATION

- BA Business Studies
- M.Sc in Management, UK
- PhD in Islamic Studies and Islamic Economics, University of Leeds (UK)

PORTFOLIO OF COURSES

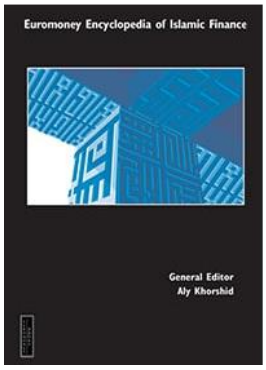
- 3-Day – Innovative Financial Engineering and Risk Management for Shariah Compliant Products
- 3-Day – Shariah Compliant Project Financing in the Oil & Gas Industry

PUBLICATIONS

- Islamic Insurance "A Modern Approach to Islamic Banking", 2004
- The Encyclopedia of Islamic finance, 2008
- Dictionary of Islamic Finance, 2011
- "A Tender Power" a Novel Elucidating Islamic Finance to a Layman, 2012
- Corporate Governance in Islamic Banks, 2014.

COURSES DELIVERED IN

- Egypt, Malaysia, London, Luxemburg



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