Advanced Upstream Petroleum Economics

Stochastic Modeling, Monte Carlo Simulation, & Decision Analysis

Date: 9th April 2012 – 13th April 2012
Location: Singapore

PetroSync Distinguished Lecturer
Dr. Wumi Iledare, SPE
Director of Energy Information Services Division
Louisiana State University

TESTIMONIALS OF COMPETENCE
• SPE Regional Award for Distinguished Contribution to Petroleum Engineering in the Area of Management and Information
• SPE Nigeria Council Best Technical Paper Presentation, Recognition and Service Awards
• Associate Editor, SPE Journal of Economics and Management
• Senior Fellow & Past President - United States Association for Energy Economics (USAEE)
• VP of Finance - International Association for Energy Economics (IAEE)
• Distinguished Fellow, Nigerian Association for Energy Economics (NAEE)

What leading organizations have said about Wumi’s previous masterclass with Petrosync:

“Classes on global fiscal systems and basic petroleum economics were useful to learn about different approaches. The @RISK and Crystal Ball class was very useful and I look forward to applying these new skills at work. A very well organized course.”
- Senior Petroleum Economist, Petronas

“This Upstream Petroleum Economics course is the best class if you want to understand economics from theories, exercises and knowledge sharing among participants and lecturer.”
- Petroleum Economist, BP Migas

“Very well-organized course and good instructor”
- Dana Petroleum

“I found that it is an excellent course especially on the hands-on exercises in the class. The notes provided are also good and can be a quick reference for future. I learnt a lot. Thanks to Dr Wumi!”
- Petroleum Economist, Petronas Carigali

Rated TOP by Leading Petroleum Professionals around the World!
Masterclass Objectives

- **FACILITATE** a better understanding of factors and stochastic variables that could impact rational economic decisions
- **LEARN** to analyze data and select defensible distributions
- **UNDERSTAND** and **CONVERSE** using the language of probability and statistics, and quantify uncertainty and risk in petroleum business decisions keeping in perspective the risk attitude of the decision maker
- **DEVELOP** skill to understand the process of building probabilistic spreadsheet models for Monte Carlo simulation analysis
- **APPLY** available commercial software such as @Risk or Crystal Ball to make simulation analysis of petroleum exploration and production investment decisions

Masterclass Description

Advanced upstream petroleum economics describes the philosophy, process, and methods underlying upstream economic evaluation of capital investments under different categories of risk and uncertainty and risk attitudes of decision makers. The short course facilitates a thorough understanding of all the necessary concepts of capital investment evaluation, capital budgeting, and investment decision criteria available and techniques for making rational economic decisions in the oil and gas industry under risk and uncertainty.

Topics covered include deterministic measures of profitability; applications of expected value concept, decision tree and expected utility functions in decision analysis; spreadsheet stochastic modeling tools and Monte Carlo simulation process and applications in the oil and gas industry.

**Key Course Content includes:**
- Future Global E&P outlook
- Overview of Measures of Profitability
- Exploration Risk Analysis Methods
- Stochastic Modeling of Profitability
- Monte Carlo Simulation Applications

Specially Designed for

This program is intended petroleum professionals involved with economic evaluations, forecasting, and economic decisions in upstream oil and gas business

- Petroleum Economists
- Planning Officers and Managers
- Regulator
- Legislative Staff
- Petroleum Engineers
- Business Analysts and Managers
- Oil & Gas Financial Consultants
- Independent Operators

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If you like to know more about this excellent program, please contact Jerry Tay (Conference Director) on +65 6415 4502 or email jerry.t@petrosync.com
Course Agenda

Day 1 - Economic Decision Tools and Investment Criteria

Review economic decision tools to evaluate projects, understand what investment criteria really mean, and know which criteria to use to make rational economic decisions on best investment options; practice building spreadsheet cash flow economic models to characterize the economic factors inherent in different petroleum fiscal arrangements.

- Introduction/course expectations
- Future global E&P outlook
- Petroleum economic evaluation fundamentals – NCF concepts / time value of money / DCF models
- Petroleum economic evaluation fundamentals – fiscal arrangements overview/ review economic profitability measures
- Review of expectations and feedback

Syndicate Exercise -- Build and analyze economic evaluation spreadsheet models fiscal systems

Day 2 - Understanding the Basic Language of Risk and Uncertainty

Learn to calculate and use descriptive statistics in business decisions, know common probability distributions and use them to express judgments about risks and uncertainties; use built-in capabilities of a spreadsheet application to generate descriptive statistics and solve various problems associated with probability calculations and probability distributions.

- Review
- Basic principles of probability and statistics—measures of central tendency, measures of variability
- Basic principles of probability and statistics—types of distribution curves and interpretations and applications
- Review of expectations and feedback

Syndicate Exercise -- Descriptive statistics and probability analysis using Excel spreadsheet applications

Day 3 - Risk and Uncertainty Analysis Methods and Applications

Review approaches to risk and uncertainty analysis and the advantages and disadvantages of each method; apply these methods to manage risk and uncertainty; apply add-in software package to quantify probabilistic treatment of uncertainty in decision making in terms of expected value and to solve decision analysis problems.

- Review
- Expected value approach and decision tree analysis – definitions, calculation, meaning & interpretation
- Expected utility theory—incorporating risk attitude, utility function, decision criteria and application for exploration economic decisions
- Review of expectations and feedback

Syndicate Exercise -- Spreadsheet applications using excel add-in to solve decision analysis problem examples

Day 4 - Monte Carlo Modeling Process and Simulation Analysis

Learn simulation modeling for Monte Carlo applications using spreadsheets. Understand how to use commercial spreadsheet simulation add-ins to achieve simulation modeling analysis of uncertainties and risks.

- Review
- Risk and uncertainty analysis using simulation—overview, process, modeling & applications
- Monte Carlo simulation spreadsheet modeling tools, analysis and interpretations of simulation results
- Review of expectations and feedback

Syndicate Exercise -- Spreadsheet applications using excel add-in software packages (Group Practicum)

Day 5 - Monte Carlo Simulation Applications in the Oil and Gas Industry

Develop skill to understand the process of using probabilistic spreadsheet models for Monte Carlo simulation for risk and uncertainty analysis. Apply spreadsheet simulation modeling tools to characterize business decision parameters subject to risk exposure.

- Review
- Spreadsheet probabilistic modeling and simulation analysis of royalty and tax contract examples
- Spreadsheet probabilistic modeling and simulation analysis of contractual system examples.
- Review of expectations and feedback

Syndicate Exercise -- Risk and uncertainty analysis in the petroleum industry using excel add-in (Group Practicum)
Dr. Wumi Iledare has around 20 years of professional experience in petroleum economics. Dr. Wumi is currently the Professor of Petroleum Economics and Policy Research and the Director of the Energy Information and Data Division of the Louisiana State University Center for Energy Studies.

Dr. Wumi worked as a petroleum/reservoir professional with Shell Petroleum Development Company in Nigeria and Mobil Producing Nigeria, and as an energy specialist with the California Energy Commission. Dr. Wumi also publishes on upstream oil and gas economics and policy within the U.S. Gulf Coast and Nigeria.

His focus is on analysis of global oil and gas industry structure, conduct, and performance; oil and gas exploration and production economics; the environmental effects of oil and gas exploration and production; taxation and regulation of the oil and gas industry; and refinery and petrochemical economics and policy. Recent seminal research contributions include an empirical analysis of worldwide deepwater prospects with emphasis on the U.S. Gulf of Mexico OCS region and the state of the global oil industry with respect to whether the world is running in to oil or out of it.

WHY YOU SHOULD ATTEND PETROSYNC’S EVENTS

- To ensure that all objectives of the course matches yours, all PetroSync programs are developed after intensive and extensive research within the industry
- PetroSync programs focus on your immediate working issues to ensure that you are able to apply and deliver immediate results in real work situations
- Application and implementation of industry knowledge and experience are the drivers for our course design, not theoretical academic lectures
- PetroSync training focuses on practical interactive learning tools and techniques including case studies, group discussions, scenarios, simulations, practical exercises and knowledge assessments during the course. Invest a small amount of your time to prepare before attending the course to ensure maximum learning
- PetroSync follows a rigorous selection process to ensure that all expert trainers have first-hand, up-to-date and practical knowledge and are leaders of their respective industrial discipline
Course Details
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INVESTMENT PACKAGES
Please circle the package that you are attending!

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<th>Investment Package</th>
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<td>Standard Price</td>
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<td>Early Bird Offer</td>
<td>9th Mar 2012</td>
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<td>Group Discount (3 or more Delegates)</td>
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* To enjoy the promotion & discount offer, payment must be made before deadline
* For 5 or more delegates, please inquire for more attractive package.
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