Financial Modeling and Petroleum Project Economics

During these two units, participants will gain an integrated and practical understanding of financial analysis tools and techniques for the oil and gas industry that are related to building pro forma project analysis, learning different methods of financial analysis, and applying different risk analysis tools to projects. The institutional format capitalises on a careful balance of formal lectures by leading experts and specially developed workshops and business games.

UNIT ONE: JUNE 5 – 9, 2017 / SEPTEMBER 11 – 15, 2017

FINANCIAL MODELING FOR THE OIL AND GAS INDUSTRY

Overview of the Petroleum Industry Today
Oil and gas measurements and units, value charts, market structures, worldwide oil and gas economics; major players, evolution of the integrated oil and gas business.

Introduction to Accounting and Financial Statements
Basic financial and accounting concepts; standard technology; depreciation, impairment, and acquisition accounting; financial statements: accounting for investments; equity methods and consolidations.

Financial Statement Analysis
Background needed to understand and build models of the four key corporate financial statements, review and discussion of key measures of financial performance; consideration of the measures used by major companies and of participants’ companies, steps required to build a robust financial projections model.

Overview of Oil and Gas Accounting
Definition of various industry terms; classification of reserves and resources; introduction of two major accounting options to account for oil and gas costs: successful efforts and full costs; GAAP filing and valuation methods to comply with SEC filing requirements, including asset impairment and asset retirement obligations.

Project Financing: Commercial Debt Finance
Corporate and project financing; sources of debt and equity financing; public and private sources of capital; multilateral and bilateral sources of financing; risk assessment and mitigation; structuring of financing; preparing the financing plan, negotiating the term sheet; preparing the financing documents; closing. Case studies – examples of project financing: Qatar Gas Project; Columbia Power Project; U.S. Gas Storage Project.

Energy Project Economics and Measures of Performance
Project cash flow analysis, discounting cash flows to obtain present value and internal rate of return, the cost of capital and the effect of debt financing, other measures of project performance, sensitivity to changes in key variables.

The Business Model
Using the balanced scorecard framework, regression analysis, and flexible budgeting, how does the organization earn profits? What are the key strategic drivers of financial success?

Cost and Expenses
“True costs” of developing and delivering products and services; using gross profit and valuation methods to comply with SEC filing requirements, including asset impairment and asset retirement obligations.

Financial Statements
Using the business model, volume, expense, and revenue data to construct and understand financial reports; using balance sheets, income statements, cash flow statements, ratio analysis, and performance outcome measurements.


PETROLEUM PROJECT ECONOMICS AND RISK ANALYSIS

Introduction to Petroleum Economics
The fundamentals of economics, background and its application to the oil and gas industries.

Energy Project Risk and Uncertainty
Identifying and quantifying energy project risks and uncertainty into project analysis; using statistical measures to quantify risk; two key risk assessment methods: scenario analysis and sensitivity analysis.

Event Identification
Identifying “trouble spots” that threaten the organization’s ability to generate profit and value, using event inventories, target minimum profits, risk tolerance levels, and event tracking processes.

Probability Theory and Quantitative Analysis
Introduction to probability theory, including probability density functions, overview of typical probability distributions and definition of key terms; applying probability theory in decision analysis with emphasis on concept of expected value.

Decision Tree Analysis
Applying a structured method for investment decision analysis; understanding the implications of different sets of decisions; identifying areas to reduce risk and understand economic opportunity cost of capital, identifying implications of various forms of contracts; analyzing implications of incremental project decisions.

Risk Assessment
Prioritizing trouble spots by likelihood of occurrence and potential impact. Using likelihood and impact tables, inherent and residual risk charts, and “heat” maps.

Risk Response
Assessing the organization’s ability to respond to trouble spots “late-ups” on paper and in reality. Using avoidance, sharing, reduction, and acceptance practices, as well as portfolio analysis techniques.

Monte Carlo Simulation
Extending the decision tree analysis framework for situations that include continuous probability scenarios; identifying the power and limitations of simulations, emphasis placed on relevance of expected values. Crystal Ball commercial software used to model risk in financial model.

Field Development, Reservoir Performance, and Surface Facilities
Formation evaluation; estimating reserves; field development; inflow performance; surface facilities design for both onshore and offshore operations; integrated reservoir management, enhanced recovery.

Managing Energy Price and Volume Risks: Futures and Hedging
The history of energy price risk management, physical, forward, and futures markets; typical futures market transactions; hedging, swaps, and options; volume risk management; weather derivatives.

Portfolio Theory and Real Options
Introduction to and discussion of Real Options and Portfolio Optimization, two other key methodologies used extensively today by many oil companies to evaluate project opportunities, understanding how a collection of investments can decrease overall risk in the portfolio.

FINANCIAL ANALYSIS BUSINESS GAME: OCEANA

This business game is an integral part of the learning process. Participants, divided into teams, make real-life technical, financial, and market decisions that commonly confront managers today. Team performance is measured on a financial basis and is catalyzed by healthy competition.

Participants, working in teams, will evaluate an oil and gas business opportunity in the Republic of “Oceana,” near Indonesia. They build a financial model that will integrate various risk associated with the investment. This model will utilize a proposed Production Sharing Agreement and incorporate revenue, capital and operating costs, financing costs, and tax projections for the life of the project.

Throughout the program, teams will add layers of complexity to the model by incorporating the different types of risk analysis tools presented in the lectures. The teams will present their project analysis to a decision review board by outlining the risk profile and expected performance measures of the project. They then learn the outcome of those decisions. Emphasis will be placed on the practical implementation of the tools presented in lectures and on developing practical financial modeling skills.