An LDI Training Program

INTRODUCTION TO PETROLEUM ECONOMICS

by

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Course Description

The petroleum industry is one of the world's most capital-intensive, technology-driven, and high-risk industries, where investment decisions involve significant financial commitments and long-term uncertainty. Every stage of the petroleum value chain—from exploration and field development to production and abandonment—requires sound economic evaluation to ensure that technical opportunities translate into commercially viable and financially sustainable projects. Consequently, petroleum economics has become an essential discipline that bridges engineering, finance, management, and public policy.

This course provides a comprehensive introduction to the fundamental principles of petroleum economics and their application to upstream oil and gas projects. Participants will gain an understanding of the economic characteristics of petroleum resources, global oil and gas markets, project cash flow analysis, petroleum fiscal systems, Production Sharing Contracts (PSC), investment evaluation techniques, risk analysis, and strategic decision-making throughout the project life cycle.

Particular emphasis is placed on the integration of technical, commercial, financial, and fiscal considerations that determine the economic value and bankability of petroleum investments. The course examines how engineering decisions influence project economics, how fiscal regimes affect the distribution of revenues between governments and investors, and how uncertainty in oil prices, production performance, development costs, and regulatory frameworks impacts investment outcomes.

While introducing internationally recognized petroleum fiscal systems and economic evaluation methodologies, the course also provides an in-depth understanding of the Indonesian Production Sharing Contract (PSC) framework—including both Cost Recovery and Gross Split mechanisms—which remains one of the most distinctive petroleum fiscal systems in the world. Through lectures, practical exercises, and case studies, participants will develop the analytical skills required to evaluate petroleum projects and support informed investment and business decisions in the upstream oil and gas industry.

Course Learning Outcomes (CLO)

Upon successful completion of this course, students will be able to:

1. Explain the economic characteristics of the petroleum industry.
2. Understand the relationship between petroleum engineering and economic decision-making.
3. Analyze the costs, revenues, and cash flows of upstream petroleum projects.
4. Describe various petroleum fiscal systems with emphasis on Production Sharing Contracts (PSC).
5. Apply basic economic evaluation techniques, including Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period.
6. Perform simple sensitivity and risk analyses for petroleum investment projects.
7. Evaluate petroleum investment opportunities from technical, commercial, and financial perspectives.

Suggested Course Modules

To provide a comprehensive learning experience, this course may be organized into the following six modules:

1. **Fundamentals of Economics and Energy Markets**
2. **Petroleum Industry Economics**
3. **Petroleum Fiscal Systems and Production Sharing Contracts**
4. **Petroleum Project Cash Flow and Economic Evaluation**
5. **Investment Decision Analysis and Risk Management**

DAY 1

Understanding the Petroleum Business and Petroleum Fiscal System

Time	**Topic**
08.00 – 08.30	Opening, Participant Introduction & Pre-Test
08.30 – 09.30	**Session 1** Introduction to Petroleum Economics • Petroleum Industry Value Chain • Why Petroleum Economics Matters • Unique Characteristics of Petroleum Business

Time	**Topic**
09.30 – 10.00	Coffee Break
10.00 – 11.30	**Session 2** Fundamentals of Economics • Scarcity & Opportunity Cost • Supply and Demand • Oil Price Formation • Market Equilibrium
11.30 – 12.30	Lunch Break
12.30 – 14.00	**Session 3** Petroleum Industry Economics • Resources vs Reserves • Exploration Risk • Development Cycle • CAPEX & OPEX • Production Profile
14.00 – 15.00	**Session 4** Petroleum Fiscal Systems • Royalty-Tax System • Concession • Service Contract • Production Sharing Contract
15.00 – 15.15	Coffee Break
15.15 – 16.30	**Session 5** Indonesian PSC • PSC Cost Recovery • PSC Gross Split • Government Take vs Contractor Take • Discussion & Case Study

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DAY 2

Petroleum Project Cash Flow and Economic Evaluation

Time	**Topic**
08.00 – 09.30	**Session 6** Petroleum Revenue and Cost Structure • Revenue Forecast • Oil Price • Production Forecast • Capital Cost • Operating Cost
09.30 – 10.00	Coffee Break
10.00 – 11.30	**Session 7** Financial Terms of PSC • FTP • Cost Recovery

Time	Topic
	• DMO
	• Investment Credit
	• Depreciation
	• Tax
11.30 – 12.30	Lunch Break
12.30 – 14.00	**Session 8** Building Petroleum Cash Flow
	• Project Cash Flow
	• Contractor Cash Flow
	• Government Cash Flow
14.00 – 15.00	**Session 9** Time Value of Money
	• Discounting
	• Present Value
	• Future Value
	• Discount Rate
15.00 – 15.15	Coffee Break
15.15 – 16.30	**Workshop 1**
	Building a Complete Petroleum Cash Flow Model in Excel

DAY 3

Investment Decision, Risk Analysis and Case Study

Time	Topic
08.00 – 09.30	**Session 10** Economic Evaluation
	• Net Present Value (NPV)
	• Internal Rate of Return (IRR)
	• Profitability Index
	• Payback Period
09.30 – 10.00	Coffee Break
10.00 – 11.30	**Session 11** Petroleum Investment Decision
	• Economic Limit
	• Break-even Price
	• Break-even Production
	• Final Investment Decision (FID)
11.30 – 12.30	Lunch Break
12.30 – 14.00	**Session 12** Risk Analysis
	• Sensitivity Analysis
	• Scenario Analysis
	• Introduction to Monte Carlo Simulation
14.00 – 15.00	**Workshop 2**

Time	Topic
	Sensitivity Analysis Using Excel
	Oil Price Scenario
	Production Scenario
15.00 – 15.15	Coffee Break
15.15 – 16.15	**Integrated Case Study**
	Complete Petroleum Economics Evaluation
	Investment Recommendation
16.15 – 16.30	Post-Test, Discussion & Closing

Learning Outcomes

By the end of the three-day program, participants will be able to:

- Understand the economic characteristics of the petroleum industry.
- Explain petroleum fiscal systems, particularly the Indonesian PSC framework.
- Develop petroleum project cash flow models.
- Apply economic evaluation techniques (NPV, IRR, PI, and Payback Period).
- Conduct basic investment risk analysis.
- Formulate investment recommendations based on petroleum economic principles.

Your Course Leader

Dr. A. Rinto Pudyantoro is a expert in the upstream oil and gas sector with over 31 years of professional experience. His career includes key roles at Vico Indonesia (10 years), BP Indonesia (4 years), and strategic positions at BP Migas and SKK Migas, where he served as Senior Manager for Revenue Accounting, Taxation, and Head of Papua-Maluku operations. Before retiring, he led the Program and Communications Division of SKK Migas.

He is the author of several books on oil and gas economics and policy, including *A to Z Bisnis Hulu Migas* (2012), *Proyek Hulu Migas: Analisis dan Evaluasi PetroEkonomi* (2014), *Dialog Tanya Jawab Migas* (2015), *Bisnis Hulu Migas* (2019), and *Kebijakan Perpajakan: Optimalisasi Insentif & Keseimbangan Fiskal* (2019, with the Fiscal Policy Agency), among others.

Dr. Rinto holds a bachelor's degree in Accounting from Gadjah Mada University (UGM), a master’s in International Finance from IBII Jakarta, and a Ph.D. in Resource Economics from IPB University. He currently serves as a senior lecturer and Chairman of the Center for Business and Economics of Petroleum and

Energy Studies (C-BEPES) at Pertamina University. Since 2005, he has actively led training programs in resource economics, petroleum economics, fiscal and regional economics, PSC accounting, project economics, budgeting, and international petroleum accounting.

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