Upstream Petroleum Economics, Risk & Fiscal Analysis
Cash Flow Analysis, Fiscal Regimes, Risk & Decision Analysis

09th - 11th February 2015 | 07th - 09th April 2015 | 03rd - 05th November 2015
at Kuala Lumpur, Malaysia

Petrosync Distinguished Lecturer
Guy Allinson
Senior Consultant
Petroleum Economics Pty Ltd
Senior Lecturer
University of New South Wales

- Over 30 years international experience in petroleum economics, risk and fiscal analysis
- Past President of New South Wales SPE Section
- Past NSW Chairman of SPE Management & Information Committee
- Delivered over 180 industry training courses on Petroleum Economics and related subjects in Asia Pacific, Australia and other parts of the world
- Consults for the international oil & gas industry on asset valuations and the commercial, economic and fiscal aspects of oil & gas development

Testimonials

“Excellent course - perfect pace and content very clearly explained. Good mix of lectures/exercises. Definitely one of the better courses I’ve attended in recent years”.

“A good background to some of the economics concepts that I’m exposed to (in a peripheral way!). The course notes will be a good future reference”.

“Thanks Guy! Some parts were difficult to grasp but knowing what they can do, how much they can affect conclusions, means I can now seek expert advice confidently when warranted”.

“Excellent all round - with little prior knowledge I was concerned about being out of my depth but the course was well paced and in enough detail for me - very enjoyable. Thanks Guy”.

“Excellent course. The exercises helped a lot and I like the idea of having extra exercises I can do after the course to reinforce the concepts taught. Thanks - I really enjoyed the course”.

“I found it especially useful to be able to use spreadsheets (prepared) to perform the calculations and analysis to support the topics that were being presented. Guy has a very good understanding and level of experience in the subject matter - and a good presentation style”.

Supported by
Masterclass Overview

Given the volatility in oil prices today, the economic evaluation of an upstream oil and gas investment is essential. Business decisions involving asset acquisitions, lease-buy assessments, exploration drilling options, oil and gas field development, equipment purchases, and fiscal negotiations all require detailed economic analysis.

The course will cover cash flow analysis, deriving and understanding economic indicators and detailed probability and fiscal analysis. These are vital components of the evaluation of investments in today’s international upstream oil and gas industry.

This 3 day course is a practical petroleum economics course that will provide participants with a complete understanding of the use of the techniques of economic analysis and risk analysis as currently practiced in the oil and gas industry. Participants will receive a thorough understanding of the context of economic analysis as well as practical instruction and an appreciation of the analytical techniques used. Along the course, participants will be engaged in exercises and examples to reinforce their understanding of the concepts learned.

Masterclass Objectives

- **GAIN** a thorough understanding of oil & gas economic evaluations
- **IDENTIFY** the main components and **CONSTRUCT** cash flow projections for your upstream projects
- **DETERMINE** key elements and determinants involved in making oil and gas investment decisions
- **UNDERSTAND** and **APPLY** economic indicators to assess oil & gas industry projects
- **QUANTIFY** and **MANAGE** uncertainty and risk faced in upstream business decisions
- **APPLY** Monte Carlo Simulation and other statistical methods in risk analysis to exploration and production investments effectively
- **UNDERSTAND, EVALUATE** and **MODEL** both fiscal and production sharing contract terms worldwide

Specially Designed for

The course is designed for upstream E&P professionals with a need for detailed understanding of the upstream petroleum economics:

- Geoscientists
- Reservoir Engineers
- Production Engineers
- Petroleum Engineers
- Planning and Development Analysts/Executives
- Commercial Analysts/Executive/Managers
- Business Planners/Analysts/Executives/Managers
- Production Sharing Executives/Managers
- Project Executives/Manager
- Petroleum Economists
- General Managers
- Finance and Account Executive/Managers

Delegates will be required to bring a laptop computer with Microsoft Excel

### Petroleum Economics Training Courses (February - December 2015)

<table>
<thead>
<tr>
<th>DATE</th>
<th>COURSE TITLE</th>
<th>INSTRUCTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>09th - 11th Feb</td>
<td>Upstream Petroleum, Economics, And Fiscal Analysis</td>
<td>Guy Allinson</td>
</tr>
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<td>07th - 09th April</td>
<td>Upstream Petroleum, Economics, And Fiscal Analysis</td>
<td>Guy Allinson</td>
</tr>
<tr>
<td>03rd - 05th Nov</td>
<td>Upstream Petroleum, Economics, And Fiscal Analysis</td>
<td>Guy Allinson</td>
</tr>
</tbody>
</table>

1. INTRODUCTION

Aims and scope

Contents
- Cash flow analysis
- Economic indicators
- Economic Evaluation Examples
- Risk analysis
- Fiscal system and PSC analysis
- Worldwide fiscal terms

2. CASH FLOW ANALYSIS

Net Cash Flow
Discussion of the main components and relative importance of components of cash flow for oil and gas investments (production, price, revenue, operating costs, capital costs, abandonment costs and fiscal costs). Oil and gas price forecasts and the treatment of price forecasts in net cash flow analysis.


Economic Life and Reserves
How net cash flow projections are critical in determining economic life and reserves. The effects of oil price, costs and fiscal terms on reserves estimates.


Distinction between Cash Flow and Profit
How cash flow is distinguished from profit. The role of depreciation. When we use cash flow and when we use profit.

Cash Flow and Tax
How tax is incorporated into cash flow projections. The basic rules for calculating tax worldwide. The effect of tax on field development decisions. Loss carry forward and the effect of different petroleum tax regimes.

[EXERCISE] : Delegates’ exercises in calculating tax and demonstrating the effects of different tax regimes.

Cash Flow and Production Sharing Contracts (PSC)
The basic economic distinction between tax regimes and production sharing contract regimes. How to make cash flow projections for production sharing systems worldwide. Cost recovery and profit sharing arrangements.

[EXERCISE] : Delegates’ exercises in cash flow analysis with different PSC terms.

Sunk Costs
The treatment and mistreatment of sunk costs in cash flow analyses and petroleum property acquisitions. Discussions of the effects of sunk costs.

Incorporating Inflation Into Cash Flow Projections.
How to inflate the components of cash flows. The conventions and the jargon.


Real and Nominal Cash Flows


Depreciation
Coverage of the main depreciation methods used in fiscal terms worldwide.

[EXERCISE] : Delegates’ exercise in preparing depreciation schedules
3. ECONOMIC INDICATORS

**Introduction**
The need to measure net cash flow projections with single indicators. The indicators used in the oil and gas industry. The importance of time.

**Net Present Value (NPV)**
The time value of money. Compounding and discounting. Using a discount factor table and measuring the effect of time and discount rate. Discounting a cash flow projection and calculating NPV. Understanding the meaning, uses and features of NPV. Valuing petroleum properties using NPV. Preliminary discussion of choosing discount rates.

[EXERCISE]: Delegates’ exercises in calculating NPV and demonstrating its features.

**Real and Nominal NPVs**
The distinction between deflating and discounting and between real and nominal discount rates and NPVs. Dealing with the pitfalls of using real NPVs.

[EXERCISE]: Delegates’ exercises in calculating real and nominal NPVs.

**Internal Rate of Return (IRR)**
The definition and application of IRR. Calculating the IRR.

[EXERCISE]: Delegates’ exercises in calculating IRR.

**Problems with IRR**
Multiple IRRs – when, how often and how they arise. How the NPV and IRR measures can give conflicting results and how to resolve this. The effect of project delays and the use of IRR.

[EXERCISE]: Delegates’ exercises in calculating multiple IRRs and seeing how they arise and how to interpret them.

**Payback**
Calculation and use of payback and discounted payback indicators. The use of discounted payback in petroleum fiscal regimes. Problems with payback. How compound payback is used in some fiscal regimes.

[EXERCISE]: Delegates’ exercises in calculating simple and compound payback for tax.

**Capital Productivity Index (CPI).**
Calculation and use of CPI. The use of CPI in oil companies and petroleum fiscal regimes. Capital rationing. Problems with CPI.

[EXERCISE]: Delegates exercises in calculating CPIs and their application in some PSCs

4. EXAMPLE ECONOMIC EVALUATIONS

**Accelerated production example.**

[EXERCISE]: Delegates’ exercise in incremental economics and the effects of fiscal terms.

**Optimising field development and determining reserves.**

[EXERCISE]: Delegates’ exercise in optimising field development and assessing reserves.

**Lease-buy decision example.**

[EXERCISE]: Delegates’ exercise in lease-buy economics and the effects of fiscal terms.
5. RISK ANALYSIS

Sensitivity Analysis
Analysing the sensitivity of investment decisions to variations in input parameters. Interpreting sensitivity diagrams. The pitfalls in using sensitivity analyses for oil industry investment decisions.

[EXERCISE] : Delegates' exercise in preparing sensitivity analyses and using them for investment decisions.

Probability Analysis
Defining and using probability distributions. Means, standard deviations, levels of confidence. Industry standard reserves definitions and classifications.

[EXERCISE] : Delegates' exercise in preparing probability analysis.

Using Probability in the oil and gas industry
Making estimates under uncertainty in the petroleum industry. Combining uncertain variables and issues with adding reserves, adding costs and analysing economics.

[EXERCISE] : Delegates' exercises in combining uncertain oil industry variables.

Monte Carlo Simulation
The mechanics of Monte Carlo simulation. Choosing probability distributions. The pitfalls of Monte Carlo simulation and how to avoid them. Economic analysis and reserves estimation using Monte Carlo simulation. Investment decisions using Monte Carlo simulation.

[EXERCISE] : Delegates' exercises in deriving and using probability distributions of oil in place, NPV and reserves using spreadsheet Monte Carlo simulation.

Exploration decisions
The definition, meaning and examples economics for oil and gas exploration drilling decisions. Expected value (EV) versus probability of success lines. Using EV to compare drilling and farmout decisions. The effects of fiscal terms and common problems with using EV. Choosing probabilities of success. Valuing properties using EV.

[EXERCISE] : Delegates' exercises in the economics of drilling, farming out acreage and the effects of fiscal terms.

6. PRODUCTION SHARING CONTRACTS, FISCAL SYSTEMS AND TERMS IN THE ASIA PACIFIC REGION

Analysis of example PSCs and fiscal terms in the Asia-Pacific region. Evaluating the severity of fiscal terms. How the fiscal components work. How certain fiscal terms can distort oil and gas project investment decisions. How to avoid potential investment distortion in the design or negotiation of fiscal terms. Examples for Indonesia, Malaysia, Thailand, Vietnam and Australia.

[EXERCISE] : Delegates' exercises in showing the structure and dynamics of example fiscal regimes in SE Asia.

7. WORLDWIDE FISCAL TERMS

The economic comparison of fiscal terms across the world - severity and efficiency.

8. SUMMARY AND CONCLUSION

The above is a guide to the topics covered during the course and the approximate timing of the topic. The presenter reserves the right to make modifications to these depending on the delegates' background and experience and the progress of the course.”
Petrosync Distinguished Lecturer

Guy Allinson
Senior Consultant
Petroleum Economics Pty Ltd
Senior Lecturer
University of New South Wales

Guy Allinson has over 30 years’ experience as a practicing Petroleum Economist in the international oil and gas industry. He consults internationally and is a Senior Lecturer at the School of Petroleum Engineering, University of New South Wales. Guy has held a range of petroleum economics and commercial positions in the oil and gas industry in Europe and the Asia Pacific regions. He has also advised companies and Governments in the Asia Pacific region on petroleum PSC and fiscal terms. He has valued many petroleum properties and companies for acquisition and sale, prepared economics research reports on the oil and gas industry and has provided commercial support for oil field operations and investments worldwide.

Guy has conducted many oil industry short courses in petroleum economics and PSC/fiscal analysis to oil industry professionals in many countries including USA, UK, Denmark, Switzerland, Australia, New Zealand, Indonesia, India, Iran, Malaysia, Thailand, Vietnam, Brunei, Egypt, Libya and South Africa. He has also given frequent presentations to oil and finance industry seminars and conferences.

IN-HOUSE SOLUTIONS

SAVE COST • IMPROVE PERFORMANCE • REDUCE RISK

PetroSync understands that in current economic climate, getting an excellent return on your training investment is critical for all our clients. This excellent training can be conducted exclusively for your organization. The training can be tailored to meet your specific needs at your preferred location and time. We will meet you anywhere around the globe.

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

SELECTED CLIENT LIST

Guy has delivered training courses and workshops to the following companies:

- BP
- BHP Billiton Petroleum
- Saudi Aramco
- Shell Australia, Malaysia and Brunei
- TOTAL
- Chevron Pacific Indonesia
- Conoco
- Schlumberger
- Sinopec
- Mobil
- Pertamina
- Petronas
- PetroVietnam
- PTTEP
- Petrofac
- Petrochina
- Murphy Oil
- Migas (Indonesia)
- Vico Indonesia
- Premier Oil
- Santos Indonesia
- Indonesian Association of Geologists
- ONGC
- Korea Petroleum Development Corporation
- Woodside
- Cairn Energy
- Oil Search
- ARCO
- Unocal
- JNOC
- Inpex
- Union Texas
- Norsk Hydro
- Maersk
- Romanian National Oil Company
- Libyan National Oil Company
- Egyptian National Oil Company
- Tunisian National Oil Company
- National Iranian Oil Company
- Petrocorp
- Origin Energy
- Geoscience Australia
- Swift Energy
- Asamera Inc.
- Lasmo plc
- Roc Oil
- British Gas
- Amoseas
- Sasol

PROGRAM SCHEDULE

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>08:00 – 08:30</td>
<td>Registration (Day1)</td>
</tr>
<tr>
<td>08:30 – 10:00</td>
<td>Session I</td>
</tr>
<tr>
<td>10:00 – 10:30</td>
<td>Refreshment &amp; Networking</td>
</tr>
<tr>
<td>10:30 – 12:00</td>
<td>Session II</td>
</tr>
<tr>
<td>12:00 – 13:00</td>
<td>Lunch</td>
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<tr>
<td>13:00 – 14:30</td>
<td>Session III</td>
</tr>
<tr>
<td>14:30 – 15:00</td>
<td>Refreshment &amp; Networking</td>
</tr>
<tr>
<td>15:00 – 16:30</td>
<td>Session IV</td>
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<tr>
<td>16:30</td>
<td>End of Day</td>
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## COURSE DETAILS

**Title:** Upstream Petroleum Economics, Risk & Fiscal Analysis  
**Date:** 09th-11th Feb 2015 | 07th-09th April 2015 | 03rd-05th Nov 2015  
**Location:** Kuala Lumpur, Malaysia

### INVESTMENT PACKAGES

<table>
<thead>
<tr>
<th>Investment Package</th>
<th>Standard Price</th>
<th>Early Bird Offer</th>
<th>Group Discount (3 or more Delegates)</th>
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</thead>
<tbody>
<tr>
<td>09th-11th Feb 2015</td>
<td>SGD $ 3,995</td>
<td>SGD $ 3,795</td>
<td>10% discount for groups of 3 registering from the same organization at the same time</td>
</tr>
<tr>
<td>07th-09th April 2015</td>
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<td></td>
</tr>
<tr>
<td>03rd-05th Nov 2015</td>
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</tbody>
</table>

* To enjoy the promotion & discount offer, payment must be made before deadline  
* For 5 or more delegates, please inquire for more attractive package.  
* Prices include lunches, refreshments and materials. Promotion & discount cannot be combined with other promotional offers.  
* Important: Please note that registration without payment will incur a SGD 200 administration fee.

### DELEGATES DETAILS

**1st Delegate Name**  
**Direct Line Number:**  
**Job Title:**  
**Head of Department:**  
**Mr [ ] Mrs [ ] Ms [ ] Dr [ ] Others [ ]**

**2nd Delegate Name**  
**Direct Line Number:**  
**Job Title:**  
**Head of Department:**  
**Mr [ ] Mrs [ ] Ms [ ] Dr [ ] Others [ ]**

**3rd Delegate Name**  
**Direct Line Number:**  
**Job Title:**  
**Head of Department:**  
**Mr [ ] Mrs [ ] Ms [ ] Dr [ ] Others [ ]**

### PAYMENT METHODS

- **By Credit Card:**  
  - Please debit my credit card:  
    - Visa  
    - MasterCard  
    - AMEX  
  - Security Code:         
  - Expiry Date:  

- **By Direct Transfer:** Please quote invoice number(s) on remittance advice  
  PetroSync Global Pte Ltd bank details:  
  - Account Name: PetroSync Global Pte Ltd  
  - Bank Name: DBS Bank Ltd  
  - Bank Code: 7171  
  - Bank Swift Code: DBSSSGSGXXX  
  - Branch code: 288  
  - Account No.: SGD: 288-901898-0  
  - USD: 0288-002682-01-6  
  - Bank Address: 12 Marina Boulevard, Level 3, Marina Bay Financial Centre Tower 3, Singapore 018982

All bank charges to be borne by payer. Please ensure that PetroSync Global Pte Ltd receives the full invoiced amount.

### CHARGES & FEE(s)

- For Payment by Direct Telegraphic Transfer, client has to bear both local and overseas bank charges.  
- For credit card payment, there is an additional 4% credit card processing fee.

### TERMS AND CONDITIONS

#### DISCLAIMER

Please note that trainers and topics were confirmed at the time of publishing; however, PetroSync may necessitate substitutions, alterations or cancellations of the trainers or topics. As such, PetroSync reserves the right to change or cancel any part of its published programme due to unforeseen circumstances. Any substitutions or alterations will be updated on our web page as soon as possible.

#### DATA PROTECTION

The information you provide will be safeguarded by PetroSync that may be used to keep you informed of relevant products and services. As an international group we may transfer your data on a global basis for the purpose indicated above. If you do not want us to share your information with other reputable companies, please tick this box.

#### CANCELLATION POLICY

You may substitute delegates at any time as long as reasonable advance notice is given to PetroSync. For any cancellation received in writing not less than fourteen (14) working days prior to the training course, you will receive credit voucher less a SGD $200 administration fee and any related bank or credit card charges.

Delegates who cancel less than fourteen (14) working days of the training course, or who do not attend the course, are liable to pay the full course fee and no refunds will be granted.

In the event that PetroSync cancels or postpones an event for any reason and that the delegate is unable or unwilling to attend, then the rescheduled date, you will receive a credit voucher for 100% of the contract fee paid. You may use this credit voucher for another PetroSync to be mutually agreed with PetroSync, which must occur within a year from the date of postponement.

PetroSync is not responsible for any loss or damage as a result of the cancellation policy. PetroSync will assume no liability whatsoever in the event this event is cancelled, rescheduled or postponed due to any Act of God, fire, act of government or state, war, civil commotion, insurrection, embargo, industrial action, or any other reason beyond management control.

#### CERTIFICATE OF ATTENDANCE

A minimum of 70% attendance is required prior issuance of PetroSync’s Certificate.

#### DETAILS

Please accept our apologies for mail or email that is incorrectly addressed. Please email us at registration@petrosync.com and inform us of any incorrect details. We will amend them accordingly.

### PAYMENT TERMS

Payment is due in full at the time of registration. Full payment is mandatory for event attendance.

### Confirmation

I agree to PetroSync’s terms & conditions, payment terms and cancellation policy.

Authorized Signature:

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**INVOICE DETAILS**

**Attention Invoice to:**  
**Direct Line Number:**  
**Fax:**  
**Company:**  
**Industry:**  
**Address:**  
**Country:**  
**Email:**  
**Postcode:**

Please note:  
- Indicate if you have already registered by Phone  
- Fax  
- Email  
- Web  
- If you have not received an acknowledgement before the training, please call us to confirm your booking.

**PAYMENT METHODS**

- **By Credit Card**  
  - Please debit my credit card:  
    - Visa  
    - MasterCard  
    - AMEX  
  - Security Code:         
  - Expiry Date:  

- **By Direct Transfer:** Please quote invoice number(s) on remittance advice

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