

## Alchemy workshops outlines

### **1. Enterprise Risk Management (12 – 30 hours of instruction)**

We focus on capital as the unifying theme for tying together frameworks, techniques and models in risk management. The workshop uses initial sessions to build working knowledge of subject terminology and notation, then uses an interactive bank simulation in to introduce key risk management concepts. Applications are presented that take quick looks at the Basel Accord and bank capital management strategies.

### **2. Derivatives – Products & Applications (12 – 30 hours of instruction)**

The first course on derivative products that takes a comprehensive look at instruments, buy and sell side drivers, motivations and fit with trading, hedging and investment strategies. Aimed at professionals involved in structuring simple as well as complex transactions, the workshop will cover:

- Working with derivative components and building blocks for equities, currencies and fixed income markets.
- Review of product types and assessing fit of type with client, writer, intermediary, investment and risk management needs.
- Plain vanilla, exotic and structured instruments, their attributes, payoff profiles and relationships.
- Target market drivers, applications and execution issues.

### **3. Interest Rate Models (12 – 30 hours of instruction)**

The three day, nine sessions, hands on workshop provides a review of interest rate models required to price, hedge and simulate derivatives on interest rates and fixed income securities in Pakistan. At the end of the workshop applicants will be able to:

- Understand and work with standard interest rate models
- Differentiate between model families as well as appreciate attributes, characteristics and implication for local usage
- Construct two common families of interest rate models
- Fine tune models and tackle key implementation issues
- Price, hedge and simulate securities and structures

### **4. Derivative Pricing (12 – 30 hours of instruction)**

The first course on options and derivatives that takes a comprehensive look at instruments as well as most common valuation methods. By the end of the workshop participants will be able to:

- Differentiate between plain vanilla, exotic and structured instruments and their payoff profiles
- Develop an intuitive understanding of risk neutral pricing and the Black Scholes valuation model
- Be able to price equity and currency derivatives using Black Scholes, binomial trees and Monte Carlo simulation
- Make appropriate modifications for dividends and interest payments, calculate Greeks and hedging analytics including Delta, Gamma, Theta and Vega for the most common transactions

### **5. Portfolio Models & Optimization (12 – 30 hours of instruction)**

Using Solver & Analysis Tool Pack the course implement portfolio management, hedging, optimization and trading strategies models in Microsoft Excel. Participants are expected to

- Build models using concepts in spreadsheets, mathematics, finance and optimizations
- Define a range of problems using Solver.
- Test, refine and implement portfolio management, diversification and risk, reward trade off strategies while using target minimum risk, return criteria.
- Optimize asset allocation with using single and multi period portfolio optimization

### **6. Fixed Income Models (12 – 30 hours of instruction)**

Fixed income model starts with the very basics of interest theory and builds up the course to a level where cash flows for complex transactions and structures are broken down into smaller pieces and then valued individually. This course is designed as an orientation and a refresher on:

- Mathematics of finance including theory of interest, cash flow pricing, valuation of bonds, debt, annuities and sinking funds
- Calculation of Internal Rate of Return (IRR) and Net Present Value (NPV).
- The law of one price, arbitrage, synthetic replication and replicating portfolios.
- Fixed Income analytics including Duration, Convexity and Key Rates.
- Fixed Income portfolio management techniques including immunization, dedication, contingent & shortfall strategies
- Advance fixed income applications including STRIPS, IO's, PO's, Asset Backs, Pass Throughs and Credit Derivatives

### **7. Advance Fixed Income Models (12 – 30 hours of instruction)**

The second course on fixed income markets uses the work done in derivatives applications and fixed income models to introduce advance topics at the intersection of both subjects. Participants are expected to be hands on with the material covered in the previous two courses and will apply them to:

- Construct the par, zero coupon and forward curve using local market data.
- Price Interest Rate Swaps and Forward Rate Agreements using the forward curve.
- Price Interest Rate Caps, Floors, Inverse Floaters & Range Floaters using the forward curve.
- Review of credit derivatives, buy and sell side motivations & local market applications.
- Develop a conceptual understanding of interest rate models, alternative pricing models, market calibration and cross checks.

### **Training Methodology**

1. The objective of each workshop is to ensure that participants build a sound understanding of relevant financial principles, product features and available toolsets with respect to fixed income instruments, derivative transactions and enterprise risk management.
2. The workshops are arranged in a facility with computers that have a functional version of Microsoft Excel Professional with Solver, Analysis tool pack and data analysis tools pre-installed.
3. The workshops are aimed at a cross section of in house professionals from risk management, corporate, internal audit, credit and treasury at client institutions.
4. A typical full length workshop will address three key themes in eighteen sessions: a) Mathematical and Statistical foundations required for risk management, b) Product knowledge and c) Risk Management skill sets and frameworks. The first six to eight sessions take a skill set based view while, the last four to six sessions integrate the acquired skills towards application and implementation of enterprise risk management frameworks.

### **Suggested workshop schedule**

09:00 am – 09:15 am – Registration, feedback & networking  
09:15 am – 11:15 am – First Session  
11:15 am – 11:30 am – Tea break  
11:30 am – 01:30 pm – Second Session  
01:30 pm – 02:30 pm – Lunch break  
02:30 pm – 04:30 pm – Third Session  
04:30 pm – 04:50 pm – Daily wrap up, questions & answers, close and review

### **Workshop Lead**

#### **Jawwad Ahmed Farid**

Jawwad is a Fellow Society of Actuaries (Chicago), a MBA from Columbia Business School (New York City) and a computer science graduate. During the last twelve years, he has worked as a consultant in North America, Pakistan and the United Kingdom with a number of blue chip clients including Hartford Life, Aegon, American General, Goldman Sachs, ING, Manu Life, Safeco, Merrill Lynch, Met Life, Sun America, Nationwide, Phoenix Life, Sumitomo Mitsui Bank, Sun Life of Canada, Pacific Life, AllState, Fidelity Investments, Transamerica, Skandia, GE Financial Assurance, Lincoln National, Ohio National, AXA Equitable and Washington Mutual Bank.

Jawwad's core areas of expertise include Asset/Risk Management, Investments, Product Development & the Financial Services Back Office. Jawwad blends a rare combination of information systems, international standards, business and product development skill set side by side with his actuarial expertise. Locally he has worked with universities to design and launch programs in computational finance and entrepreneurship, design and conducted multiple workshops on Derivatives, Enterprise Risk Management and Interest Rate Models and helped price Interest Rate Swaps, Caps, Floors and FRA's for financial services sector clients. His domestic client list includes State Bank of Pakistan (the Pakistani Central Bank), National Bank of Pakistan, Muslim Commercial Bank, Union Bank, United Bank Limited, Bank AlFalah, Pak-Kuwait Investment, Saudi Pak Commercial Bank, PICIC, ABN AMRO, Shell Pakistan, Lundbeck Pharmaceutical, International General Insurance and others. Some of his recent assignments have included:

- ✓ Comprehensive analysis & extension of risk exposure measurement & management system for the hedge fund margin lending business of a bulge bracket investment bank & brokerage institution in Western Europe.
- ✓ Review of capital adequacy rules and framework for insurance and reinsurance organizations in a financial services free zone in the Middle East.
- ✓ Product design, development, marketing and deployment of an industry wide enterprise risk management solution targeted at the financial services sector in Pakistan inline with the central bank's capital adequacy and market risk capital reporting requirements as well as with BASLE II.
- ✓ Initial feasibilities for micro pension and low income housing finance products for a multilateral European aid agency
- ✓ The launch of 100 plus annuity and pension product across 6 broker dealers, banks and 25 insurance carriers in 10 months in North America.
- ✓ Product design of a Motor Bond product for retail and corporate customers combining elements of comprehensive automobile insurance, sinking funds, savings, risk sharing & claims management in Pakistan.
- ✓ Product development, design and deployment of an industry wide information exchange, order entry, transaction processing, commission and money settlement platform standard within the financial services sector in North America.
- ✓ Product design of an exchange based supply chain management solution for a leading international Japanese bank and its customers in North America.
- ✓ Valued added actuarial advisory services for employee benefits plans, IAS 19 and SFAS 87 & SFAS 106 disclosures.

#### **Additional Information**

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