DERIVATIVES (ADVANCED) MODULE

➢ Derivatives & Quantitative Fundamentals – A Backgrounder

A. Derivative Types

B. Beta

C. R-Square

D. Continuous Compounding

E. Option Valuation

1. Historical Volatility (σ)

F. Normal Distribution

G. Share Prices – Lognormal Distribution

H. Volatility (σ)

- ARCH(m) Model
- Exponentially Weighted Moving Average (EWMA)
- GARCH Model
- Implied Volatility

➢ Fundamentals of Equity Futures

A. Contracts

B. Selection Criteria

- Stock Selection Criteria
- Criteria for Continued Eligibility of Stock
- Criteria for Re-inclusion of Excluded Stocks
- Index Selection Criteria

C. Price Steps and Price Bands for Contracts

D. Quantity Freeze for Futures Contracts

E. Novation

F. Margins

G. Daily Mark-to-Market Settlement

H. Final Settlement

I. Cost of Carry

J. Determining Stock Futures Price (without Dividend)
K. Determining Stock Futures Price (with Dividend)
L. Determining Index Futures Price (without Dividend)
M. Determining Index Futures Price (with Dividend)
N. Cash & Carry Arbitrage
O. Reverse Cash & Carry Arbitrage
P. Convergence of Spot & Futures
Q. Contango & Backwardation
R. Cost of Carry - Commodities

➢ Investment with Equity Futures

A. Relation between Futures and Spot Price
B. Payoff Matrix from Futures
   - Long Futures
   - Short Futures
C. Hedging with Futures
D. Basis Risk
E. Modifying the Portfolio Beta with Futures
F. Rolling Hedges
G. Investment Strategies Using Futures

➢ Interest Rate Futures

A. Interest Risk Management through Futures
B. Contracts & Eligible Securities
C. Conversion Factor
D. Cheapest to Deliver (CTD)
E. Contract Structure & Mechanics of FUTIRD
F. Contract Structure & Mechanics of FUTIRT

➢ Black-Scholes Option Pricing Model

A. European Call Option
B. European Put Option

C. Dividends

D. American Options

➢ Option Greeks

A. Delta

- European Call on non-dividend paying stock
- European Put on non-dividend paying stock
- European Call on asset paying a yield of q
- European Put on asset paying a yield of q

B. Gamma

- European Call / Put on non-dividend paying stock
- European Call / Put on asset paying a yield of q

C. Theta

- European Call on non-dividend paying stock
- European Put on non-dividend paying stock
- European Call on asset paying yield of q
- European Put on asset paying yield of q

D. Vega

- European Call / Put on non-dividend paying stock
- European Call / Put on asset paying yield of q

E. Rho

- European Call on non-dividend paying stock
- European Put on non-dividend paying stock

➢ Currency Futures & Options

A. Currency Futures Contracts

B. Calculation of Daily Settlement Price of Currency Futures

C. Transactions in Currency Futures

D. Currency Futures or Forward Rate Agreement

E. Currency Options Contracts

F. Valuation of Currency Options

- European Call Option
- European Put Option

G. Transactions in Currency Options

➢ Swaps

A. OTC Products

B. Interest Rate Swap

C. Valuing Interest Rate Swaps

- Valuation based on Bonds
- Valuation based on Forward Rate Agreements (FRAs)

D. Currency Swap

E. Valuing Currency Swaps

F. Swaption

➢ Embedded Options in Debt Instruments

A. Warrants

B. Convertible Bonds

C. Call Option in a Debt Security

D. Put Option in a Debt Security

E. Put & Call Option in a Debt Security

F. Caps

G. Floors

H. Collars

➢ Credit Risk & Derivatives

A. Credit Risk & Rating

B. Default History & Recovery Rates

C. Calculation of Default Risk

- Simple Approach
- Present Value Approach

D. Mitigating Credit Risk

E. Credit Default Swaps

F. Collateralized Debt Obligation (CDO)