

## **MT-355 Financial Risk Management**

Foundation of risk management: the need of risk management, basic risk types, measurement and management tools, modern portfolio theory (MPT), capital asset pricing model (CAPM), risk-adjusted performance measures (RAPM), quantitative analysis: discrete and continuous probability distributions, population and sample statistics, statistical inference and hypothesis testing, estimating the parameters of distributions, graphical representation of statistical relationships, linear regression with single and multiple regressors, the ordinary least squares (OLS) method, interpreting and using regression coefficients, the t-statistic, and other output, hypothesis testing and confidence intervals, Heteroskedasticity and multicollinearity, Monte Carlo methods, estimating correlation and volatility using EWMA and GARCH models, volatility term structures, financial market and products; mechanics of OTC and exchange markets, stocks, forwards, futures, swaps and options, interest rates and measures of interest rate sensitivity, derivatives on fixed income securities, interest rates, foreign exchange, and equities, commodity derivatives, hedge funds, foreign exchange risk, corporate bonds, rating agencies, valuation and risk models: value at risk (VAR), fixed income valuation, country and sovereign risk models and management, credit risk, operational risk, stress testing and scenario analysis and backtesting, risk management and investment management: portfolio construction, portfolio-based performance analysis, tests of the capital asset pricing model (CAPM), portfolio and component VAR, risk budgeting, risk monitoring and performance measurement.

### **Recommended Books:**

1. "Value at Risk; The New Benchmark for Managing Financial Risk", Philippe Jorion, McGraw-Hill; 3<sup>rd</sup> Edition, 2006.
2. "The Handbook of Risk Management: Implementing a Post-Crisis Corporate Culture Philippe Carrel The Wiley Finance Series, 1<sup>st</sup> Edition, 2010.
3. "Options, Futures, Other Derivatives and DerivaGem, CD Package", John C. Hull, Prentice Hall; 8 Edition, 2011.