COURSES CONTENT – MINIMUM TEACHING HOURS

Probability and applications using computational techniques – 24 hours
Presented are fundamental probabilistic techniques with emphasis on multivariate distributions, simulations techniques, stochastic procedures, analytical and computational study.

Statistics and applications using computational techniques – 24 hours
This course includes the theory and empirical application of statistical methods. It introduces the principles of statistical inference and develops in detail estimation methods, hypothesis testing and constructing confidence intervals. The empirical application consists of using statistical methods and models with the appropriate statistical packages.

Financial Markets and Corporate Finance – 24 hours
This course aims at presenting and analyzing products of money and capital markets, their basic valuation rules, their characteristics as well as the way in which the financial administration operates in the contemporary business.

Optimization Techniques and Portfolio Theory – 24 hours
Financial analysts - decision makers depend on optimization techniques to guide them in their decisions. Over the last few decades, optimization techniques have become the cornerstone of computational financial analysis and especially of portfolio construction. This course introduces different optimization techniques (eg linear and square programming, convex optimization), constrained optimization, dynamic programming, and applications in empirical financial problems such as optimal portfolio creation and asset/ liability management.

Linear models and Time Series Analysis – 24 hours
This course introduces the theory and practical application of linear regression models and time series analysis. It presents the properties, statistical inference, forecasting, and model selection for this category of statistical models. Empirical analysis consists of applying regression models and time series to real data using statistical packages and software.

Stochastic Processes and Derivative Markets – 24 hours
The theory of derivative asset pricing is presented using stochastic processes, an introduction of key derivatives pricing models, structure and operation of derivative markets, derivatives risks, and derivative portfolio risk management. Computational techniques for pricing derivative products are also presented.

Financial Econometrics – 24 hours
The course provides a broad introduction to the theory and empirical analysis of advanced econometric models in financial applications such as the construction of optimal portfolios, the assessment of manager performance and forecasting of economic time series. The course introduces multifactorial models, which can be used to estimate the expected returns of economic time series and multifactor heteroscedasticity models, which can be used to model covariances/ correlations of financial returns. Indicative examples where these advanced econometric models / techniques are applied are (a) the construction of optimal portfolios; (b) the evaluation of the performance of the various hedge fund or hedge fund mutual funds; (c) stock returns.

Financial Mathematics with Applications – 24 hours

The theory of asset pricing is introduced in complete and incomplete markets, as well as computational techniques of financial mathematics.

Life Insurance – General Insurance – 24 hours
Life insurance models and general insurance models are presented, with emphasis on model simulation and understanding of the risks they generate.

Insurance Risk Management - Solvency II– 24 hours
Measurement and management of insurance risk, capital adequacy and solvency. There is a thorough and critical presentation of the Solvency II framework, and its applications.

Credit and Financial Risk Management – 24 hours
This courses aim is to (a) present and analyze the financial products of derivatives markets, the basic rules for evaluation and their characteristics, (b) to present how these products can be used to cover risk hedging, speculation and arbitrage.

Topics in Insurance and Finance– 24 hours
Presentation of selected advanced cutting edge issues from the area of insurance and finance.