

## **Διαχείριση Χρηματοοικονομικών Κινδύνων / Financial Risk Management**

### **Aims and Objectives:**

The educational aim of the course is to provide an integrated overview of the models of asset dynamics for different risk types (Equities, Interest Rates, FX & Credit) and the key techniques of identification, measurement and management of financial risk. The course will begin by a brief overview of the basic financial instruments and associated fundamental concepts: fixed income securities; Simple derivatives: Futures, Forwards and Interest Rate Swaps; Options and the Black-Scholes framework. The discussion will continue with an introduction to statistical measures and error metrics of different distributions. We will proceed to examine risk measures such as Value at Risk (VaR) and Expected Shortfall; the three key methodologies for VaR calculation (historical, parametric and Monte Carlo simulation), their advantages, shortfalls and limitations will be discussed extensively. Additionally, we will examine the formalism of credit risk and the Basel II capital requirements; finally, we will dedicate one session to the formalism of Decision Analysis principles and the management of risks outside the financial markets. The course will conclude with a computer lab session in which participants will gain hands-on experience with Monte Carlo simulations, and will employ such techniques to find solutions to real-world risk management problems. Participants should be familiar with basic concepts in securities and derivatives, and have basic knowledge of differential calculus and linear algebra (matrix operations). However, we will be able to review in class all mathematical background as necessary. Familiarity with Microsoft EXCEL or a statistical programming language is also essential.