

# **Matlab for Financial Modelling**

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## **Purpose of the course**

The course is an introduction to computer programming in the MATLAB environment. The aim of the course is to start thinking in an algorithmic way and achieve the knowledge and the skills that students need in order to develop simple financial applications with MATLAB.

## **Table of contents**

### **Basic concepts**

1. From problem analysis to problem solution: data and algorithms;
2. Variables, arrays and matrices;
3. Structured programming: sequence, selection, iteration and functions;
4. Elementary algorithms on arrays;
5. Elementary numerical algorithms;

### **MATLAB**

6. MATLAB Desktop and Workspace;
7. MATLAB programming language features:
  - a. M-files (user defined macros and functions)
  - b. Control structures
  - c. Matrices;
  - d. Numerical and logical expressions
8. Data import/export;
9. Optimization toolbox;
10. Charts;

### **Financial applications**

11. Portfolio selection;
12. Option pricing.

## **Exam**

The exam will be a class-exam. The implementation of some user-defined MATLAB functions will be required.

## **Texts/Resources**

1. Handouts
2. Online MATLAB documentation
3. D. C. Hanselman, B. L. Littlefield, *Mastering MATLAB 7*, Prentice Hall, 2004
4. P. Brandimarte, *Numerical Methods in Finance and Economics, A MATLAB-Based Introduction 2<sup>nd</sup> ed.*, John Wiley & Sons, New York 2006.