

Computing in Finance (June 2007)

This is a “how-to” course that concentrates on the use of Excel spreadsheets and the Visual Basic for Applications programming language to cover the broad area of models in Finance from the very earliest (Portfolio Theory) to the very latest (Variance Gamma Option pricing). For each model we will follow the path from mathematical equations to spreadsheet model and then onto VBA program code.

Each week’s workshop will be based around Excel spreadsheets incorporating VBA user-defined functions that will develop into a class library of numeric functions. The course will stress the comparative accuracy and speed of numerical methods rather than mere programming skills. We will cover nearly all the material in our Advanced Modelling in Finance using Excel and VBA book. In addition, we will use examples of additional material as practical exercises to be developed by students.

The planned list of subjects for the sessions is as follows:

0. Modelling in Excel
Advanced Excel Functions (AMF, Chap 2)
Examples on Project Valuation using Eurotunnel
1. Portfolio Optimisation and Asset Pricing
Portfolio Optimisation (Chap 6)
Asset Pricing (Chap 7)
Example using LTCM (Jorion article)
2. Visual Basic for Applications 1
Introduction and Macros (Chap 3)
3. Visual Basic for Applications II
User-defined Functions (Chap 4)
4. Interest Rate Models
Introduction to Bonds (Chap 14)
Interest Rate Models (Chap 15)
5. European Options
Black-Scholes (Chap 11)
Quick Binomial
Monte Carlo Simulation and Numerical Integration (Chap 12)
Example on Variance Gamma option pricing
6. American Options
Binomial Trees (Chap 10)
Example on Ju-Zhong Pricing Approximation
7. Revision
8. Examination

You would be foolish not to buy our textbook as it provides you with a range of completed spreadsheets and VBA code across a wide variety of topics in Finance that you cover during the rest of your degree

AMF = Advanced Modelling in Finance using Excel and VBA by Mary Jackson and Mike Staunton (Wiley, 2001)

Last year, there were 3 homework exercises (done in small groups) accounting for 30% of the grade and the individual exam accounting for the remaining 70% of the grade

The first session (Tue Evening, 5 June) will be an introduction to Excel and must be attended by those with little or no current knowledge or use of spreadsheet programming. I will arrange for all students to answer a questionnaire on their experience with Excel so that I can choose who must attend. It is very important for the rest of the course that students are then able to keep up with the Excel skills that I will take for granted as the sessions progress. It is sad but true for practical classes such as mine that the benefits from the course will be directly related to the time and effort that you spend improving your knowledge of Excel. I will do my very best to help you learn but you will have to do your share of the work too

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