

VICTORIA INTERNATIONAL APPLIED FINANCE PROGRAMME
School of Economics and Finance

MMAF525 FINANCIAL MODELLING

Trimester One 2011

COURSE OUTLINE

Name and Contact Details

The course coordinator is Joe Cheung. Joe is based in Auckland and therefore the preferred contact is via email: jcheung@xtra.co.nz.

The administrator for this courses is Anna Potts, Room RH307, (04) 463 6148, viaf-programme@vuw.ac.nz

Study/Teaching Period

Monday 28th February – Wednesday 29th June 2011
(Final Assignment Due: Wednesday 29th June 2011)

Block Release Times and Class Venue

Block 1 9:00am Saturday 16th April – 12:30pm Monday, 18th April, 2011
Block 2 9:00am Saturday 11th June – 12:30pm Monday 13th June, 2011

Classes will take place in KK216 on the Kelburn Campus. A detailed schedule of each block release will be supplied closer to the April and June sessions. **Attendance for all sessions of both block releases is compulsory.**

Withdrawal from Courses:

1. Your fees will be refunded if you withdraw from this course on or before 11 March 2011.
2. The standard last date for withdrawal from this course is Friday 27th May. After this date, students forced to withdraw by circumstances beyond their control must apply for permission on an '*Application for Associate Dean's Permission to Withdraw Late*' including supporting documentation

The application form is available from either of the Faculty's Student Customer Service Desks.

Course Learning Objectives

This course is designed to provide students with the knowledge of building financial models in Excel. The goal is to bridge the gap between theory and practice. To achieve this goal, students will learn basic programming and modelling skills in Excel and in VBA. These skills will then be applied to build models based on materials covered in various courses offered in the VIAF programme. This course aims to provide participants with the tools and confidence in building their own financial models for solving problems encountered in finance.

Course Content

First Block (16th April – 18th April): Introduction to VBA and Applications in Finance

A: Materials to be covered

The main objective of this session is to introduce students to VBA programming and basic modelling skills in Excel. These skills will be applied to build a number of basic models in Finance.

Excel and VBA skills:

- Advance Excel functions, array operations and interactive charts
- Object oriented programming approach and VBA programming environment
- Variable types and use of VBA variables
- Range object and properties
- Basic VBA language structures
- Arrays and dynamic arrays
- Writing simple user-defined functions
- Use of array functions and writing array functions

Applications in Finance:

- Financial arithmetic calculations with the use of user-defined functions
- Term structure of interest rate problems such as deriving a zero-coupon yield curve, curve fitting and simple term structure modelling
- Price and return distributions of financial assets
- Simulation
- Value at risk and bootstrapping methods

B: Readings

1. Text: John Simon Benninga, Financial Modelling, 3rd edition, the MIT Press.

<i>Textbook chapter(s)</i>	<i>Topic</i>
30, 31, 33, 34, 35	Excel functions, arrays/matrices and other useful features
36, 37, 38, 39, 40	User-defined functions, VBA loop structures, macros and user interaction, arrays
1	Financial calculations
27	Modelling the term structure
18	Lognormal distribution and simulations
15	Value at risk and bootstrapping

2. Supplementary notes on Excel and VBA (these are distributed along with this course outline).

Second session (11th June – 13th June): Building More Advanced Models in Finance

A: Materials to be covered

The objective of this session is to extend the VBA modelling skills developed in the first session and apply them to a selection of Finance topics. These topics include option valuation, portfolio optimisation, drawbacks in classical portfolio optimisation and alternative approaches, duration, immunisation and default-adjusted expected bond returns.

B: Readings

Text: John Simon Benninga, Financial Modelling, 3rd edition, the MIT Press.

<i>Textbook chapter(s)</i>	<i>Topic</i>
16, 19	Option valuation
8, 9, 10.1-10.6, 12	Portfolio selection
13	Black-Litterman approach to portfolio optimisation
25, 26	Duration and immunisation
28	Default-adjusted expected bond returns

Course Project

A key learning outcome of this course is to ensure students are capable of building an Excel model to solve practical problems in Finance. The course project is therefore an integral and important part of the assessment process. The 28 percent weight being allocated to the course project is a reflection of its importance.

Please note that the course project is an individual assignment and NOT a group project. You must develop your own Excel model. A jointly developed model will not be accepted. A financial model will generally consist of a set of inputs, a processing module and a set of outputs (tables, graphs, etc.). It should be designed in such a way that it can readily accommodate a 'what-if' analysis, i.e. the model should allow assessments of how changes in values of inputs can affect the model outputs (values, profits, losses, etc). You are expected to apply modelling skills covered in this course to build the model. You can also develop a financial model that is

work-related. In that case, however, you should not use any commercially sensitive data in the model.

If you would like to get some advance feedback on your ideas about the project, you can choose to hand in a one-page proposal of your project when you submit Assignment 2, although this is not mandatory.

When you hand in your final project, attach a brief summary that highlights all the features in your model to ensure that all the efforts you put into the project will be given proper considerations.

Course Delivery

The course will be delivered in two block releases. Students are expected to complete all readings, exercises and assignments before each block release. Intensive examples of a number of financial models covering various topics in Finance will be covered in each block release. There will be a compulsory 3-hour test at the end of each block release.

Pre-requisite Skills

Prior knowledge in VBA programming is neither required nor assumed. However, participants are required to have intermediate level Excel skills before taking this course. It is most likely that you would have already met this requirement if you have been using Excel on a regular basis. However, if you are a new Excel user or your Excel skills are at the beginner's level, it is essential that you bring yourself up to speed in Excel skills before the course starts.

Note that we will be using Excel 2007 in this course. The computer lab at Victoria University will only have Excel 2007 installed and therefore you will need to sit the tests in Excel 2007. Even if you are a proficient user of previous Excel versions, it will still take you some time to be familiar with Excel 2007. Therefore, it is necessary that you have access to Excel 2007 and use Excel 2007 in completing all the assignments.

There are many introductory Excel 2007 books that are available in bookstores which you might find useful. For example, two good reference books would be:

- "Using Microsoft Office Excel 2007" by Bill Jelen, Que.
- "Excel 2007 Bible" by John Wakenbach, Wiley.

While students are not required to have prior programming experience, this course does involve a substantial amount of writing and reading VBA codes. This could be a highly time-consuming and frustrating experience for some. Therefore, before committing to take this course, it is strongly recommended that you consider very carefully whether you are prepared to invest a significant amount of time in learning advanced Excel modelling skills.

Expected Workload

	<u>Activity type</u>	<u>Number of hours</u>
Outside the two block releases	Readings/studying	100 hours
	Assignments	25 hours
	Project	25 hours

During the two block releases

Lectures/tests	40 hours
Studying	10 hours

Textbook & Reading Materials

- Simon Benninga, Financial Modelling, 3rd edition, the MIT Press.
- Supplementary notes for the first session.
- Introductory books on Excel 2007 (if required).

Materials and Equipment

Students need to have access to Excel 2007 in order to study for this course. All assignments, class examples and tests will be based on Excel 2007. The tests will be open-book and you will be asked to answer the test questions in Excel 2007 in the computer lab. If you are not familiar with using Excel 2007, you might also need to purchase an introductory book on Excel 2007 for reference at your own expense.

Assessment Requirements

Your assessed work may also be used for quality assurance purposes, such as to assess the level of achievement of learning objectives as required for accreditation and audit purposes. The findings may be used to inform changes aimed at improving the quality of FCA programmes. All material used for such processes will be treated as confidential, and the outcome will not affect your grade for the course.

Assessment items

Assessment items in this course include two assignments, one course project and two tests:

Assessment Item	Weight	Learning Objectives
Test 1 (3 hours)	30%	Acquiring essential skills in Excel and VBA programming for developing finance models
Test 2 (3 hours)	30%	Applying modelling skills in various finance topics
Assignment 1a	3%	Acquiring essential skills in VBA programming for developing finance models
Assignment 1b	3%	Acquiring essential skills in VBA programming for developing finance models
Assignment 2	6%	Applying modelling skills in various finance topics
Project	28%	Building a financial model to put theory into practice
<i>Total</i>	<i>100%</i>	

Dates when assessment items are due or take place (in chronological order)

Assessment Item	Date/Due Date
Assignment 1a	(Wed) 23 Mar 2011
Assignment 1b	(Wed) 6 April 2011
Test 1 (3 hours)	(Mon) 18 April 2011
Assignment 2	(Wed) 1 June 2011
Test 2 (3 hours)	(Mon) 13 June 2011
Project	(Wed) 29 June 2011

Note: All assessment items must be submitted via Blackboard. (<http://blackboard.vuw.ac.nz/>)

Use of Turnitin

Student work provided for assessment in this course may be checked for academic integrity by the electronic search engine <http://www.turnitin.com>. Turnitin is an on-line plagiarism prevention tool which compares submitted work with a very large database of existing material. At the discretion of the Head of School, handwritten work may be copy-typed by the School and subject to checking by Turnitin. Turnitin will retain a copy of submitted materials on behalf of the University for detection of future plagiarism, but access to the full text of submissions will not be made available to any other party.

Mandatory course requirements

To achieve a pass in this paper, a student must:

1. obtain an average mark of at least 50% over all course assessments; and
2. **achieve a minimum of an average of 45% in the two tests;** and
3. attend both block releases.

If you have, or become aware of, any health condition that could prevent you attending a VIAF compulsory block release, then you should notify the Programme director immediately (dawn.lorimer@vuw.ac.nz).

Note that failure to meet mandatory requirements does not prevent a student completing other pieces of assessment, including any final examination. (See section 2 of the Assessment Handbook).

Penalties

Marks for each assignment will be reduced by 5% for every day late. The date of submission to Blackboard shall be taken as the date of delivery. There will be a final cut off date, which is one week after the due date for each assignment, after which no assignment will be accepted.

Class Representative

A class representative will be elected in the first block, and that person's name and contact details will be made available to VUWSA, the Course Coordinator and the class. The class representative provides a communication channel to liaise with the Course Coordinator on behalf of students.

Communication of Additional Information

Additional information including assignment questions, details of the block course schedule, feedback on course assessments, etc will be provided primarily via Blackboard (<http://blackboard.vuw.ac.nz/>) and email. Students are responsible for checking messages in Blackboard on a regular basis and ensuring that the VIAF administrator, (email: viaf-programme@vuw.ac.nz), has your up to date email and postal addresses, as well as ensuring your details are correct on Student Records.

For the following important information follow the links provided:

Academic Integrity and Plagiarism

<http://www.victoria.ac.nz/home/study/plagiarism.aspx>

General University Policies and Statutes

Find key dates, explanations of grades and other useful information at www.victoria.ac.nz/home/study

Find out about academic progress and restricted enrolment at <http://www.victoria.ac.nz/home/study/academic-progress.aspx>

The University's statutes and policies are available at www.victoria.ac.nz/home/about/policy, except qualification statutes, which are available via the Calendar webpage at <http://www.victoria.ac.nz/home/study/calendar.aspx> (See Section C).

Further information about the University's academic processes can be found on the website of the Assistant Vice-Chancellor (Academic) at www.victoria.ac.nz/home/about_victoria/avcacademic/default.aspx

AVC (Academic) Website: information including: Conduct, Academic Grievances, Students with Impairments, Student Support

http://www.victoria.ac.nz/home/about_victoria/avcacademic/Publications.aspx

Faculty of Commerce and Administration Offices

<http://www.victoria.ac.nz/fca/studenthelp/>

Manaaki Pihipihinga Programme

http://www.victoria.ac.nz/st_services/mentoring/