TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI
VICTORIA
UNIVERSITY OF WELLINGTON

VICTORIA INTERNATIONAL APPLIED FINANCE PROGRAMME
School of Economics and Finance

MMAF525 FINANCIAL MODELLING

Trimester One 2008

COURSE OUTLINE

Contact Details
The course coordinator is Dawn Lorimer. Room RH306. Preferred contact is by email. Email address: dawn.lorimer@vuw.ac.nz

The course Lecturer is Joe Cheung. Joe is based in Auckland and therefore the preferred contact methods are email jcheung@xtra.co.nz or Blackboard (http://blackboard.vuw.ac.nz/).

Block Release Times
Block 1 9:00am Saturday 12th April – 12:00pm Monday, 14th April, 2008
Block 2 9:00am Saturday 31st May – 12:00pm Monday 2nd June, 2008

A detailed schedule of each block release course will be supplied closer to the April and June sessions. **Attendance for all sessions of both block releases is compulsory.**

Course Objectives
This course is designed to equip students with the technical knowledge of building financial models in Excel. The aim is to bridge the gap between theory and practice. To achieve this goal, students will learn modelling and basic programming skills in Excel and in VBA. These skills will then be applied to build models based on materials that are covered in the VIAF programme.

Modelling skills acquired in this course will provide participants with the tools and confidence in their own finance applications.

The three assignments are designed to assess students' basic skills in Excel and VBA. The course project is designed to assess students' ability to apply Excel modelling skills to a Finance topic of their own choice.

Pre-requisite Skills
Prior knowledge in VBA programming is neither required nor assumed. However, it is required that participants have intermediate level Excel skills before taking this course. It is likely that you have already met this requirement if you have been using Excel on a regular basis. However, if your Excel skill is at the beginner's level, it is necessary that you make

additional preparation before the course starts. There are many Excel books available on the market that can help. For instance, a good reference book is:

"Excel 2003 Bible" by John Walkenbach, Wiley.

While no prior programming experience is required, this paper does involve a substantial amount of writing and reading VBA codes. This could be a highly frustrating and time-consuming experience for some. It is strongly recommended that you consider very carefully whether you are prepared to invest in learning advanced Excel modelling skills before you decide to proceed.

Course Content
First session (12th April – 14th April): Introduction to VBA and Applications in Finance

A: Materials to be covered
The main objective of this session is to develop modelling techniques in Excel as well as basic skills in VBA programming and utilise these skills to build simple Finance applications.

VBA skills:
- Object oriented programming approach and the VBA programming environment
- Variable Declaration and Variable Types
- Range Objects and Properties
- Basic VBA Language Structures
- Arrays and Dynamic Arrays
- Writing Simple Functions
- Array Functions and writing array functions
- Improving Presentation with Charts and subroutines

Finance applications:
- Financial arithmetic calculations (annuities, leasing, etc.) with user-defined functions
- Term structure of interest rate problems, such as deriving a zero-coupon yield curve, curve fitting and simple term structure modelling
- Distributions of financial asset prices/returns and simulation
- Value at risk and bootstrapping methods

Note: Examples from these Finance applications should also give you a head start on the course project that involves designing a financial model of your own choice (more details below).

B: Readings

1. Text: John Simon Benninga, Financial Modelling, 2nd edition, the MIT Press.

Textbook chapter(s)	*Topic*
26, 27, 29 and 30	Excel preliminaries
31, 32, 33	User-defined functions, VBA loop structures, macros and user interaction, arrays

1	Financial calculations
22	Modelling the term structure
15, 25	Lognormal distribution and simulations
12	Value at risk and bootstrapping

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

Second session (31st May – 2nd June): Building Advanced Financial Models

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, company/stock valuation models, portfolio optimisation, duration, immunisation and default-adjusted expected bond returns.

B: Readings

Text: John Simon Benninga, Financial Modelling, 2nd edition, the MIT Press.

Textbook chapter(s)	***Topic***
13, 16, 18	Option valuation
2, 3 and 4	Company/stock valuation
7, 8, 9, 11	Portfolio selection
20, 21	Duration and immunisation
23	Default-adjusted expected bond returns

C: Course Project

A key learning outcome of this course is the ability to build a 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 projects is a reflection of its importance.

Please note that the course project is an individual assignment and not a group project. You need to develop your own Excel model to tackle some finance problem(s) of your choice. In general, a model will consist of a set of inputs, a processing module and a set of outputs (tables, graphs, etc.). Also, as a general rule, a financial model must be flexible enough to allow assessments on changes in target variables (e.g. values, profits, losses, etc) under a different set of input values. You should utilise materials and techniques learnt in this course in building the model.

You can develop a financial model that is work-related. However, you should use a set of made up data to avoid issues with confidentiality. If you want to get some advance feedback on your ideas, you can attach a one-page proposal of your project when you hand in Assignment 2 but this is not mandatory.

When you hand in your project, attach a brief user-guide or summary that highlights all the features in your model to ensure that these features will be given proper considerations.

Assessment Criteria
Your course project will be assessed using the following set of criteria:

1) Problem definition. Is the problem that the model is trying to solve well defined? (You could include a description in your model to explain the problem and how your model is structured to solve the problem.)
2) Model integrity. Are there errors or logical errors in the model? Does the model break down when different inputs are used?
3) Modelling techniques/skills. Are the techniques used appropriate for the problem? Is the model built in a proficient manner? Has the model incorporated skills/techniques covered in the course?
4) Presentation. Is the model easy to use and follow? Does the model look professional?
5) Level of difficulty. This criterion is included to discourage attempts to trivialise the exercise rather than to encourage the selection of difficult problems. Most models that are genuine attempts to solve a reasonable problem will not have marks added or deducted under this criterion. However, there will be a heavy penalty for models that are trivial and require minimal efforts to complete.

In order to maintain the integrity of the assessment, students should be aware that an interview on the course project may be conducted before a final mark is awarded. During the interview, questions related to various aspects of the project will be asked to ascertain that the student has sufficient knowledge to have completed the project alone. Any such interview will be notified and arranged in advance. Moreover, since this is an individual assignment and not a group project, a zero mark may be awarded to any slightly modified version of the same model that is submitted by another student.

Expected Workload

	Activity type	Number of hours
Weeks (12) outside block release		
	Readings/studying	100 hours
	Assignments	25 hours
	Project	25 hours
Two block releases		
	Lectures/tests	40 hours
	Studying	10 hours

Textbooks & Readings
Simon Benninga, Financial Modelling, 2nd edition, the MIT Press.

There is also a set of supplementary notes for the first session.

Assessment Requirements
To pass, a student must obtain an average mark of at least 50% over total course assessment. There will be two assignments, one course project and two tests.

The first assignment will consist of 3 sets of VBA exercises/tasks. It is primarily a tool to get students started on learning VBA before the first session. The assignment may require a substantial amount of time to complete, but by design each set of exercises will carry only 2% of the total marks. This is to encourage students to learn the materials themselves without collaborations and at the same time not having to worry too much about the effect these exercises might have on the final grade. It is important that you do not collaborate with other participants in doing these exercises. You need to acquire the basic programming skills in order to tackle more interesting and challenging tasks later on. A set of VBA notes will accompany these exercises.

The second assignment will consist of exercises related to the materials in the block releases. This will be handed out in the first block release.

The first and second tests will be 2 ½ hours long each, and held at the end of each block release in the computer lab. Marks will be allocated as follows:

Tests:	One test at each block release session based on reading assigned for period leading up to the block release and material presented at the block release (at 30% each)	60%
Assignments:	Assignment 1 (3 sets of exercises at 2% each)	6%
	Assignment 2	6%
	Course Project (discussed above)	28%
Total Assessment:		100%

The due dates for the assignment and the project are listed below:

Assignment 1 (a)	Fri 21 March 2008
Assignment 1 (b)	Fri 28 March 2008
Assignment 1 (c)	Fri 4 April 2008
Assignment 2	Fri 16 May 2008
Course project	Tue 24 June 2008

All assignments must be submitted via the Digital Drop Box function on Blackboard. (http://blackboard.vuw.ac.nz/)

Penalties

Marks for each assignment will diminish by 5% for every day late, with a weekend counting as one day. The date of submission shall be taken as the date of delivery or the day of postmark, if by post. There will be a final cut off date, one week after the due date for each assignment, after which no assignment can be accepted.

Mandatory Course Requirements

To pass, a student must: (i) attend all sessions of both block release courses; (ii) achieve a minimum of a 45% average in the two tests.

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 possibly also by email and post. Students are responsible

for ensuring that the VIAF administrator, (email: viaf-programme@vuw.ac.nz), has their up to date email and postal addresses, as well as ensuring your details are correct on Student Records.

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, preferably by email, dawn.lorimer@vuw.ac.nz.

Faculty of Commerce and Administration Offices

Railway West Wing (RWW) - FCA Student and Academic Services Office

The Faculty's Student and Academic Services Office is located on the ground and first floors of the Railway West Wing. The ground floor counter is the first point of contact for general enquiries and FCA forms. Student Administration Advisers are available to discuss course status and give further advice about FCA qualifications. To check for opening hours call the Student and Academic Services Office on (04) 463 5376.

Easterfield (EA) - FCA/Education/Law Kelburn Office

The Kelburn Campus Office for the Faculties of Commerce and Administration, Education and Law is situated in the Easterfield Building on the ground floor (EA005). This counter is the first point of contact for:

- Duty tutors for student contact and advice.
- Information concerning administrative and academic matters.
- Forms for FCA Student and Academic Services (e.g. application for academic transcripts, requests for degree audit, COP requests).
- Examinations-related information during the examination period.

To check for opening hours call the Student and Academic Services Office on (04) 463 5376.

Notice of Turnitin Use

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 identifies material that may have been copied from other sources including the Internet, books, journals, periodicals or the work of other students. Turnitin is used to assist academic staff in detecting misreferencing, misquotation, and the inclusion of unattributed material, which may be forms of cheating or plagiarism. *At the discretion of the School, handwritten work may be copy typed by the School and subject to checking by Turnitin.* You are strongly advised to check with your tutor or the course coordinator if you are uncertain about how to use and cite material from other sources. 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.

General University Policies and Statutes

Students should familiarise themselves with the University's policies and statutes, particularly the Assessment Statute, the Personal Courses of Study Statute, the Statute on Student Conduct and any statutes relating to the particular qualifications being studied; see the Victoria University Calendar or go to www.victoria.ac.nz/home/about/policy/students.aspx

For information on the following topics, go to the Faculty's website www.victoria.ac.nz/fca under Important Information for Students:

- Academic Grievances
- Student and Staff Conduct
- Meeting the Needs of Students with Impairments
- Student Support

Academic Integrity and Plagiarism

Academic integrity is about honesty – put simply it means *no cheating*. All members of the University community are responsible for upholding academic integrity, which means staff and students are expected to behave honestly, fairly and with respect for others at all times.

Plagiarism is a form of cheating which undermines academic integrity. The University defines plagiarism as follows:

The presentation of the work of another person or other persons as if it were one's own, whether intended or not. This includes published or unpublished work, material on the Internet and the work of other students or staff.

It is still plagiarism even if you re-structure the material or present it in your own style or words.

Note: It is however, perfectly acceptable to include the work of others as long as that is acknowledged by appropriate referencing.

Plagiarism is prohibited at Victoria and is not worth the risk. Any enrolled student found guilty of plagiarism will be subject to disciplinary procedures under the Statute on Student Conduct and may be penalized severely. Consequences of being found guilty of plagiarism can include:

an oral or written warning
cancellation of your mark for an assessment or a fail grade for the course
suspension from the course or the University.

Find out more about plagiarism, and how to avoid it, on the University's website:
www.victoria.ac.nz/home/studying/plagiarism.html

Manaaki Pihipihinga Programme

Manaaki Pihipihinga is an academic mentoring programme for undergraduate Māori and Pacific students in the Faculties of Commerce and Administration, and Humanities and Social Sciences. Sessions are held at the Kelburn and Pipitea Campuses in the Mentoring Rooms, 14 Kelburn Parade (back courtyard), Room 109D, and Room 210, Level 2, Railway West Wing. There is also a Pacific Support Coordinator who assists Pacific students by linking them to the services and support they need while studying at Victoria. Another feature of the programme is a support network for Postgraduate students with links to Postgraduate workshops and activities around Campus.

For further information, or to register with the programme, email *manaaki-pihipihinga-programme@vuw.ac.nz* or phone (04) 463 6015. To contact the Pacific Support Coordinator, email *pacific-support-coord@vuw.ac.nz* or phone (04) 463 5842.