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 2006

COURSE OUTLINE

Contact Details

The course controller is Joe Cheung. Preferred contact is by email. Email address: jcheung@xtra.co.nz.

Block Release Times

9:30am Saturday 22nd April – 12:30pm Monday 24th April, 2006
and 9:30am Friday 16th June – 12:30pm Sunday 18th June, 2006.

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 financial theory and practice. To achieve this goal, students will learn basic programming/modelling skills in Excel VBA. These skills will then be applied to develop models based on finance theories that students might have learnt from other VIAF courses.

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

The 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.

Pre-requisite Skills

It is required that participants have achieved intermediate level Excel skills (without any programming) before taking this course. It is likely that you would meet 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 is:

"How to Do Everything in Microsoft Office Excel 2003" by Guy Hart-Davis, McGraw Hill.

While no programming experience is assumed or expected of you, there will be a substantial amount of writing and reading VBA programming codes in this course. It

could be a highly frustrating and time-consuming experience for some participants. It is strongly recommended that you think carefully whether you do need to invest in advanced Excel modelling skills before you start.

Course Content

First session (22 April – 24 April): Introduction to VBA and Applications in Finance

A: Materials to be covered

The main objective of this session is to develop basic skills in VBA and Excel and learn how to utilise them in 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
- Passing Arguments in Functions and Subroutines
- Writing Simple Functions
- Array Functions and writing array functions
- Improving Presentation with Charts
- Introduction to User-Forms and Event-Handlers

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 and simple term structure modelling
- Distributions of financial asset prices and simulation methods
- Value at risk and bootstrapping methods

Examples from these Finance applications should also give you a head start on the course project of 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, 5	Financial calculations and leasing
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 (16 June – 18 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 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

The key learning outcome is the ability to build a model to solve a Finance problem. It is difficult to assess such ability based on conventional tests. Therefore, a course project is an integral and important part of the assessment process, and hence the relatively high weighting (30%) being allocated to it.

Students are expected to select a Finance problem and develop an Excel model to tackle the problem. The model will generally consist of an interface for inputs, a processing module and a set of outputs (tables, graphs, etc.). It is expected that the model developed will utilise materials learnt in this course, such as the use of user-defined functions and VBA subroutines.

Students are encouraged (but not required) to submit a summary for the project before the second session. The summary should include a definition of the Finance problem and a 'blueprint' for the model – a description of the components such as input data required, how the data will be processed and what outputs will be generated. Comments on the project ideas will be provided so that students can get a head start on the project.

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.

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

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 1% 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 about the marks too much. It is important that students do not collaborate with other participants in doing these exercises in order to acquire the basic programming skills to take on 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 first and second sessions. This will be handed out in the first session.

The first and second tests will be 2 ½ hours long, and held at the end each session 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.	60%
Assignments:	Assignment 1 (3 sets of exercises at 1% each):	3%
	Assignment 2	7%
	Course Project	30%
Total Assessment:		100%

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

Assignment 1 (a)	31st March 2006
Assignment 1 (b)	7th April 2006
Assignment 1 (c)	14th April 2006
Assignment 2	2nd June 2006
Course project	30th June 2006

All assignments should be emailed directly to jcheung@xtra.co.nz with CC to bun.wong@vuw.ac.nz by the due dates.

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) obtain an average mark of at least 50% over total course assessment; (iii) achieve a minimum of a 45% average in the two tests.

Communication of Additional Information
Any additional information including assignment questions, details of the block course schedule, feedback on course assessments, etc will be provided by email or by post. Students are responsible for ensuring that the VIAF Programme Senior Administrator, Bun Wong, has their up to date email and postal addresses.

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 Acting Programme Director immediately, preferably by email, roger.bowden@vuw.ac.nz.

Faculty of Commerce and Administration Offices
Railway West Wing (RWW) - FCA Student Administration Office
The Student Administration 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 office on (04) 463 5376.

Easterfield (EA) - FCA/Law Kelburn Office
The Kelburn Campus Office for the Faculties of Commerce & Administration and Law is situated in the Easterfield Building - it includes the ground floor reception desk (EA005) and offices 125a to 131 (Level 1).The office is available for the following:

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

Check with the Student Administration Office for opening times (04) 463 5376.

General University Policies and Statutes
Students should familiarise themselves with the University's policies and statutes, particularly those regarding assessment and course of study requirements, and formal academic grievance procedures.

Student Conduct and Staff Conduct
The Statute on Student Conduct together with the Policy on Staff Conduct ensure that members of the University community are able to work, learn, study and participate in the academic and social aspects of the University's life in an atmosphere of safety and respect.

The Statute on Student Conduct contains information on what conduct is prohibited and what steps can be taken if there is a complaint. For queries about complaint procedures under the Statute on Student Conduct, contact the Facilitator and Disputes Advisor. This Statute is available in the Faculty Student Administration Office or on the website at: www.vuw.ac.nz/policy/StudentConduct.
The policy on Staff Conduct can be found on the VUW website at:
www.vuw.ac.nz/policy/StaffConduct.

Academic Grievances
If you have any academic problems with your course you should talk to the tutor or lecturer concerned or, if you are not satisfied with the result of that meeting, see the Head of School or the Associate Dean (Students) of your Faculty. Class representatives are available to assist you with this process. If, after trying the above channels, you are still unsatisfied, formal grievance procedures can be invoked. These are set out in the Academic Grievances Policy which is published on the VUW website:
www.vuw.ac.nz/policy/AcademicGrievances.

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. Plagiarism is **prohibited** at Victoria.

The University defines plagiarism as follows:

> Plagiarism is presenting someone else's work as if it were your own, whether you mean to or not.

'Someone else's work' means anything *that is not your own idea, even if it is presented in your own style. It includes material from books, journals or any other printed source, the work of other students or staff, information from the Internet, software programmes and other electronic material, designs and ideas. It also includes the organization or structuring of any such material.*

Plagiarism is not worth the risk.
Any enrolled student found guilty of plagiarism will be subject to disciplinary procedures under the Statute on Student Conduct *(*www.vuw.ac.nz/policy/studentconduct*)* and may be penalized severely. Consequences of being found guilty of plagiarism can include:

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

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

Students with Disabilities
The University has a policy of reasonable accommodation of the needs of students with disabilities. The policy aims to give students with disabilities an equal opportunity with all other students to demonstrate their abilities. If you have a disability, impairment or chronic medical condition (temporary, permanent or recurring) that may impact on your ability to participate, learn and/or achieve in lectures and tutorials or in meeting the course requirements, then please contact the Course Coordinator as early in the course as possible. Alternatively you may wish to approach a Student Adviser from Disability Support Services to confidentially discuss your individual needs and the options and support that are available. Disability Support Services are located on Level 1, Robert Stout Building, or phoning 463-6070, email: disability@vuw.ac.nz. The name of your School's Disability Liaison Person can be obtained from the Administrative Assistant or the School Prospectus.

Student Support
Staff at Victoria want students' learning experiences at the University to be positive. If your academic progress is causing you concern, please contact the relevant Course Co-ordinator, or Associate Dean who will either help you directly or put you in contact with someone who can.

The Student Services Group is also available to provide a variety of support and services. Find out more at www.vuw.ac.nz/st_services/ or email student-services@vuw.ac.nz.

VUWSA employs two Education Coordinators who deal with academic problems and provide support, advice and advocacy services, as well as organising class representatives and faculty delegates. The Education Office is located on the ground floor, Student Union Building, phone 463 6983 or 463 6984, email education@vuwsa.org.nz.

Manaaki Pihipihinga Maori and Pacific Mentoring programme (Faculties of Humanities and Social sciences and Commerce and Administration).

- **What:** Academic Mentoring for Maori and Pacific students studying at all levels in the above faculties. Weekly sessions for an hour with a mentor to go over assignments and any questions from tutorials or lectures. Registered students can use the faculty's study rooms and computer suite at any time at Kelburn and Pipitea.

- Mature student and Post grad network

If you would like to register as a mentor or mentee please contact the coordinator.

Where:

Melissa Dunlop
Programme Coordinator
Room 109 D
14 Kelburn Parade: back courtyard
Ph: (04) 463 6015
Email: Maori-Pacific-Mentoring@vuw.ac.nz

Please Note: A mentoring room will also be running at Pipitea Campus starting January. Please contact the Programme Coordinator for details.