

VICTORIA INTERNATIONAL APPLIED FINANCE PROGRAMME
School of Economics and Finance

MMAF525 FINANCIAL MODELLING

Trimester One 2007

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 is by email. The email address is: jcheung@xtra.co.nz.

Block Release Times

9:00am Friday 20th April – 12:00pm Sunday, 22nd April, 2007
and 9:00am Friday 15th June – 12:00pm Sunday 17th 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 and 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 in 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 intermediate level Excel skills (without any programming) 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:

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

While no prior programming experience is assumed or expected of you, there will be a substantial amount of writing and reading VBA programming codes in this course. This could be a highly frustrating and time-consuming experience for some. It is strongly recommended that you consider very carefully whether you do need to invest in advanced Excel modelling skills before you proceed any further.

Course Content

First session (20 April – 22 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 Excel, VBA 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
- Writing Simple Functions
- Array Functions and writing array functions
- Improving Presentation with Charts
- Basic Concept of an event handler

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

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.

<i>Textbook chapter(s)</i>	<i>Topic</i>
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 (15th June – 17th 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.

<i>Textbook chapter(s)</i>	<i>Topic</i>
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 some financial problems. The course project is an integral and important part of the assessment process, which is reflected in the 28 percent weight being allocated to it.

Please note that this 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 any issues with confidentiality. You can attach a single-page proposal of your project when you hand in Assignment 2 if you want to get some advance feedback on your ideas. However, 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 are 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? Is the model clumsy? 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, slightly modified versions of the same model could receive a zero mark for this assignment.

Expected Workload

	<u>Activity type</u>	<u>Number of hours</u>
Weeks (12) outside block release	Readings/studying	95 hours
	Assignments	20 hours
	Project	35 hours
Two block releases	Lectures/tests	40 hours
	Studying	10 hours

Note that the actual hours spent may vary depending on individual background and prior exposure to Excel.

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 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 how the marks might affect the final grade. It is important that you do not collaborate with other participants in doing these exercises so that you can 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 block releases. 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 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 30 March 2007
Assignment 1 (b)	Fri 6 April 2007
Assignment 1 (c)	Fri 13 April 2007
Assignment 2	Tue 5 June 2007
Course project	Mon 2 July 2007

All assignments should be emailed directly to jcheung@xtra.co.nz and '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 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 - 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.
- 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.

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.vuw.ac.nz/policy.

Student 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 are to be taken if there is a complaint. For information about complaint procedures under the Statute on Student Conduct, contact the Facilitator and Disputes Advisor or refer to the statute on the VUW policy 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; class representatives may be able to help you in this. If you are not satisfied with

the result of that meeting, see the Head of School or the relevant Associate Dean; VUWSA Education Coordinators are available to assist in 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 at 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. 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 student 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 penalised 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 at www.vuw.ac.nz/home/studying/plagiarism.html.

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 Head of 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.

Students with Impairments

The University has a policy of reasonable accommodation of the needs of students with disabilities. The policy aims to give students with disabilities the same opportunity as 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, 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 (DSS) to discuss your individual needs and the available options and support on a confidential basis. DSS are located on Level 1, Robert Stout Building, telephone (04) 463 6070, email disability@vuw.ac.nz. The name of your School's Disability Liaison Person is in the relevant prospectus or can be obtained from the School Office or DSS.

Student Support

Staff at Victoria want students to have positive learning experiences at the University. Each Faculty has a designated staff member who can either help you directly if your academic progress is causing you concern, or quickly put you in contact with someone who can. Assistance for specific groups is also available from the Kaiwawao Māori, Manaaki Pihipihinga or Victoria International.

In addition, the Student Services Group (email student-services@vuw.ac.nz) is available to provide a variety of support and services. Find out more at www.vuw.ac.nz/st_services/.

VUWSA employs 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 (tel. 04 463 6983 or 04 463 6984, email education@vuwsa.org.nz) is located on the ground floor, Student Union Building.

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 5233 ext. 8977. To contact the Pacific Support