VICTORIA

UNIVERSITY OF WELLINGTON

School of Economics and Finance

MMAF 531

SPECIAL TOPIC: MATHEMATICS OF FINANCE

Trimester 2, 2012

COURSE OUTLINE

Coordinator/Lecturer   Leigh Roberts, RH 323, phone 463 5937
        office hour: 10.30 - 11.20 Thursdays in RH 323
        email: leigh.roberts@vuw.ac.nz

Administrator   Anna Potts, RH 307, phone 463 6148
        email: anna.potts@vuw.ac.nz

Lecture times   Thursday 8.30 - 10.20, RWW 126

Trimester dates

Teaching Period: Monday 16 July to Friday 19 October 2012
Study Period: Monday 22 October to Thursday 25 October 2012
Examination Period: Friday 26 October to Saturday 17 November 2012 (inclusive)

Note: Students who enrol in courses with examinations should be able to attend an examination at the University at any time during the formal examination period.

Withdrawal from the course

Your fees will be refunded if you withdraw from this course on or before 27 July 2012.

The standard last date for withdrawal from this course is Friday 28 September 2012. After this date, students forced to withdraw by circumstances beyond their control must apply for permission on the form 'Application for Associate Dean's permission to Withdraw Late', and include supporting documentation. This form is available from the Faculty's Student Customer Service Desks.

Course Learning Objectives

By the end of this course, students should

- exhibit a sound comprehension of the theory of compound interest and its applications to insurance in particular, and to the financial world in general.
- be able to apply financial mathematical tools to the pricing and evaluation of fixed interest and insurance contracts, and the simpler financial derivatives.
- exhibit a sound comprehension of the concepts underlying the yield curve and credit spreads.
- be able to place financial mathematics principles within the framework of financial risk management.

The course learning objectives apply to all sections of the course and are subject to testing in each item of assessment.

Course Content

The content and timing of the course may differ slightly from the information below.

Date	Week	Topic	Notes Chs.	Test	Assignments set	submitted
16-20 July	1	EAR, APR: $i, i^{(2)}, \delta$	1,2			
23-27 July	2	Annuities, Loans	3		1	
30 July - 3 Aug	3	Loans, Bonds	4			
6-10 August	4	Duration, Immunisation	5		2	1
13-17 August	5	Derivatives overview	8			
20-24 August	6	Options, Black Scholes	9			2
Mid trimester break, 2 weeks:		*27 August - 7 September 2012*				
10-14 Sept	7	Swaps, Yield curve	10			
17-21 Sept	8	Futures, Forwards	12	Test	3	
24-28 Sept	9	FRAs	20			
1-5 Oct	10	Return, Volatility	17		4	3
8-12 Oct	11	Volatility derivatives	17			
15-19 Oct	12	Revision				4

Course Delivery

One two hour lecture per week for 12 weeks.

Expected Workload

It is expected that the course will require approximately 200 hours of work, including class time.

Readings

Notes and readings will be made available on Blackboard, to be found at
http://www.blackboard.vuw.ac.nz/

A calculator is needed for the tests and the final exam, as well as for tutorials and assignments. The calculator must be able to work out powers, and have the exponential and the logarithmic functions. In addition, the calculator must be silent and have its own power source.

More advanced calculators, such as graphics and programmable calculators, are not needed for this course. Programmable calculators must be reset prior to the tests and exam.

Assessment

- 50%   Three hour examination, during the period 26 October - 17 November 2012.
- 30%   One test of duration 100 minutes.
- 20%   Weighted average assignment mark.
          Assignments are expected to be due at the end of weeks 4, 6, 10 and 12.

It is intended to hold the test approximately 2/3 of the way through the course, probably in week 8. Subject to sufficient speed in progressing through the course material the test will be held in class time, on a date to be fixed in consultation with the class. The timing of the later assignments may need to be altered in light of the timing of the test, but alterations will be made in consultation with the class.

Provided the student has good reason (for instance a medical certificate), and obtains permission *before* the due date from the course coordinator, there will be no penalty for handing in an assignment late. In other cases the assignment will first be graded on a basis comparable with those assignments handed in on time, and then have 5% of that grade subtracted for each day or part-day for which the assignment is late.

An assignment is expected to be written *entirely* by the student. In cases where there is any doubt in the marker's mind as to whether the assignment is entirely the student's own work, the coordinator reserves the right to withhold the mark until the situation has been clarified.

Note: 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 purposes will be treated as confidential, and the outcome will not affect your grade for the course.

Mandatory course requirements

Taking the test is compulsory; and in order to pass the course, it is necessary to obtain at least 40% in the final examination.

Class representative

A class representative will be elected in the first class, whose name and contact details will be made available to VUWSA, the Course Coordinator and the class. The class rep-

resentative provides a communication channel to liaise with the Course Coordinator on behalf of students.

Communication of additional information

Additional information will be conveyed to students via Blackboard and/or email.

Emails may be sent to the address that you supplied with your enrolment; but they may also be sent to your SCS email address, which is your official university email address. You should keep an eye on both email addresses.

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 my 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.

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
http://www.victoria.ac.nz/home/study

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

The University's statutes and policies are available at
http://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 (See Section C)

Further information about the University's academic processes can be found on the website of the Assistance Vice-Chancellor (Academic) at
http://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 Offices
http://www.victoria.ac.nz/fca/studenthelp/

Te Putahi Atawhai
Maori and Pacific Mentoring Programme
http://www.victoria.ac.nz/tpa/