

School of Economics and Finance

MMAF 531

FINANCIAL MATHEMATICS AND INSURANCE

Trimester 2, 2007

COURSE OUTLINE

Coordinator/Lecturer Leigh Roberts, RH 323, phone 463-5937
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Lecture times Monday 12.40 - 2.30, RWW 126

Tutorial times TBA

Course Objectives

To gain an appreciation of the theory of compound interest and its applications to insurance on the one hand, and to the financial world on the other.

Course Content

The course is modelled closely on the actuarial paper CT1 of the Institute of Actuaries. An exemption from the equivalent professional paper is not however guaranteed.

Principal elements of the syllabus include:

1. Compound interest theory and the simpler annuity and assurance functions, incorporating a simple life table.

2. Valuation of loans, including Makeham's formula and the rule of 78, and the impact of income and capital gains tax.
3. Real yield allowing for inflation and indexation. Time weighted rate of return, linked internal rate of return.
4. Duraiton, matching, immunisation, convexity of a stream of payments.
5. Term structure of interest rates. Spot and forward interest rates. Deterministic and stochastic interest rate models.

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, generally on Blackboard although sometimes in class.

It is *not* recommended that you purchase any text books for this course. Books which may be useful for parts of the course, however, include:

- J. J. McCutcheon and W. J. Scott (1986), *An introduction to the mathematics of finance*. Butterworth/Heinemann.
- D. M. Knox, P. Zima and R. L. Brown (1999), *Mathematics of Finance*, second edition. McGraw Hill.

You can find Blackboard at <http://www.blackboard.vuw.ac.nz/>

Assessment

EITHER

- 70% Three hour final examination, in the period 15 October - 10 November 2007
- 15% One test, to be held in class time
- 15% Average of six assignments

OR

- 50% Three hour final examination, in the period 15 October - 10 November 2007
- 25% One test, to be held in class time
- 25% Average of six assignments

whichever is to the student's advantage, save that those students obtaining a grade of B+ or better for the course need to obtain at least a B+ under the arrangement with the higher final exam component.

It is intended to hold the test a little after halfway through the course. 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.

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 essay will first be graded on a basis comparable with those essays 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.

Due dates for assignments are normally two weeks after being set.

Mandatory course requirements

In order to pass the course, it is compulsory to sit for both the test and the exam.

Communication

Additional information or information on changes will be posted on Blackboard. Some information may be emailed to you via your SCS address, so check this regularly.

SUPPLEMENTARY INFORMATION

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 <http://www.vuw.ac.nz/policy>.

For information on the following topics, go to the Faculty's website <http://www.vuw.ac.nz/fca>

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

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, phone (04) 463 5233 ext. 8977 or email manaaki-pihipihinga-programme@vuw.ac.nz. To contact the Pacific Support Coordinator, phone (04) 463 5842 or email pacific-support-coord@vuw.ac.nz.