

School of Economics and Finance
MMAF527 Special Topic: Options

Trimester 1 2009

COURSE OUTLINE

Names and Contact Details

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Administrator: Sue Freear, RH327, phone 463-5380,
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Trimester Dates

Monday 2 March to Wednesday 1 July 2009.

Class times and Room numbers

Thursday 3:40-5:30pm, RWW127

Withdrawal dates

Information available via

<http://www.victoria.ac.nz/home/admisenrol/payments/withdrawalsrefunds.aspx>

Course content

The following is the timetable for the course, with suggested readings for each section. The readings are fairly extensive, but hopefully should give you plenty of alternative explanations of the material covered in lectures.

Date	Lecture	Readings
March 5	Introduction to derivatives.	H, chapters 1-2,5,8,10. WHD, chapter 1.
March 12	Stochastic Calculus.	H, chapter 12. WHD, chapter 2. BR sections 3.1-3.3.
March 19	Risk-Neutral Valuation: PDE Approach. <i>Assignment 1 due.</i>	H, chapter 13. WHD, chapters 3-5.
March 26	Risk-Neutral Valuation: Martingale Approach.	BR, chapters 1-3.
April 2	Dividends and Options on different securities.	H, chapter 14. WHD, chapter 6. BR, chapter 4
April 9	Dividends and Options on different securities, cont'd <i>Assignment 2 due.</i>	
April 30	<i>Midterm Exam</i>	
May 7	Numerical Methods: Finite Difference Methods.	H, chapter 17. WHD, chapters 8-10.
May 14	Numerical Methods: Monte Carlo Simulation.	H, chapter 17.
May 21	Risk management. <i>Case due.</i>	H, chapters 15-16, 18-19.
May 28	Fixed income derivatives.	H, chapters 4, 28-29. WHD, chapter 17. BR, chapter 5. C, chapter 4.
June 4	Fixed income derivatives, cont'd <i>Assignment 3 due.</i>	

Course Learning Objectives

By the end of this course, students should be able to:

- C1 Understand stochastic calculus, and use Ito's lemma to solve option pricing problems.
- C2 Apply the partial differential equation and martingale approaches to option pricing (including being able to derive the Black-Scholes formula).
- C3 Use finite difference and Monte Carlo techniques to price options where a closed form solution does not exist.
- C4 Hedge options and evaluate Value at Risk for portfolios of stocks and derivatives.
- C5 Appreciate the general problem of pricing fixed income securities.
- C6 Use the Vasicek and Cox-Ingersoll-Ross models for the short rate to price coupon bonds, and the Vasicek model to price options on coupon bonds.

Readings

Readings will be taken from a variety of sources. Probably the most used reference on this material is :

- J. Hull, "Options, Futures and Other Derivatives", Prentice Hall, 6th edition. [H]

However, for some of the topics, we will find the following books useful:

- M. Baxter and A. Rennie, "Financial Calculus: An introduction to derivative pricing", Cambridge, First edition. [BR]
- P. Wilmott, S. Howison and J. Dewynne, "The Mathematics of Financial Derivatives: A Student Introduction", Cambridge, First edition. [WHD]
- A. J. G. Cairns, "Interest Rate Models: An Introduction", Princeton, First edition. [C]

Expected workload

Expected workload for this course is 200 hours.

Materials and Equipment

Non-programmable calculators are allowed for the midterm and final exams.

Assessment Requirements

Your course mark will be a weighted average, made up as follows:

Assignment 1:	5%	due March 19.
Assignment 2:	5%	due April 9.
Midterm exam:	30%	on April 30 (during regular class time).
Live case:	25%	due May 21.
Assignment 3:	5%	due June 4.
Final exam:	30%	two hours, date will be scheduled during the university examination period (between 12 June to 1 July 2009).

The assignments will contain problems similar to those which will be found in the exam, while the live case will allow you to use some of the tools from the course to tackle a realistic options pricing problem using actual market data.

Penalties

Assignments and cases are due at the start of the lecture indicated. Assignments and cases handed in late will not be marked.

Examinations

Students who enrol in courses with examinations are obliged to attend an examination at the University at any time during the formal examination period.

Examination dates for trimester one: Friday, 12 June to Wednesday, 1 July 2009 (inclusive).

Mandatory course requirements

None.

Communication of additional information

Information on the course, including assignments and lecture notes, will be distributed via blackboard, which can be found at <http://blackboard.vuw.ac.nz/>.

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

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: <http://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.

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.