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School of Economics and Finance  
**MOFI 405 STOCK PRICES AND VOLATILITY  
MODELLING**

Trimester One 2009

**COURSE OUTLINE**

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**Lecturer** Dr John Randal, RH308, phone 463-5558 (coordinator)  
contact by email preferred at: john.randal@vuw.ac.nz

**Lecture times** Tuesdays, 10:30–12:20, RWW415

**Tutorial (lab) time** Fridays, 12:40–14:30, TBC

**Objectives**

This course has been designed to introduce students to some of the special features of financial data and the specialised techniques used to cope with these features. The course is intended to be useful preparation for a job as a quantitative analyst, or for postgraduate study in finance. Throughout the course, general and transferable computer skills will be developed, including the ability to program modern financial techniques.

**Course content**

The course will follow Stephen Taylor's book, *Asset Price Dynamics, Volatility, and Prediction*. Changes to the schedule will be notified in class.

Date	Topic	Text
3 Mar	Financial data analysis	Ch 2, 3
10 Mar	Stochastic processes	Ch 3
17 Mar	Stylised facts of financial data	Ch 4
24 Mar	Volatility	Ch 8
31 Mar	ARCH processes	Ch 9
7 Apr	ARCH processes, ctd	
<i>Mid-trimester break, 2 weeks</i>		
28 Apr	A volatility switching model	Ch 11
5 May	Switching model, ctd	
12 May	Continuous time processes	Ch 13
19 May	Continuous time processes, CEV	
26 May	Continuous time processes, JDP	
2 Jun	Estimation	Ch 10, 11, 13

## Expected workload

You are expected to spend roughly 150 hours completing this course. This includes preview, attendance and review of the lecture material, preparation and attendance at the tutorials, completion of tutorial exercises, completion of projects, preparation and attendance of the exam. On average, this is roughly 10 hours per week between the start of the course and the exam, but the actual load is unlikely to be uniform.

## Readings

Taylor's book is essential reading for this course. There are two copies on three day loan at the RLWY branch of the VUW library (call number HG4636 T246 A) or you may purchase a copy at the VUW Book Centre for \$87.95. Purchase is recommended.

## Course Materials

The statistical software R has been installed on the SCS computers. If you regularly use a non-VUW PC, R is available free of charge at <http://www.r-project.org/> for Windows, Mac or Linux. Alternatively, bring a blank CD-R or a memory stick to John, and he will give you a copy of the most recent version.

## Assessment requirements

The course content will be assessed by way of four project assignments. These will be distributed throughout the course, and will consist of theoretical problems, and computer exercises. They may require some additional background reading. The assignments will be worth 15% each, i.e. 60% in total.

Topic	Lectures	Due date
Stylised facts and volatility	L3,4	Friday 3 April, 2pm
ARCH processes	L5,6	Monday 4 May, 2pm
Volatility switching model	L7,8	Friday 15 May, 2pm
Continuous time processes	L9,10	Friday 29 May, 2pm

The course will also be assessed via a two hour exam in the University exam period (8 June – 1 July). This exam will consist of essay questions (possibly including mathematical argument) which will test appreciation and understanding of the techniques covered and their role in financial research. The exam will be worth the remaining 40%.

In the event that this assessment scheme yields a fail grade, but the exam mark alone yields a pass, a C pass will be awarded.

## Penalties

Projects handed in late will attract a 10% penalty per day for the first five days, and be awarded zero after five days. Extensions may be negotiated prior to the deadline but not after.

## Mandatory course requirements

A short computing assignment must be completed to the required standard, and submitted at or before the second tutorial (week 2).

## Communication of additional information

Course notices will generally be relayed in class, via email, and put on Blackboard. Any queries should be directed to John.

## 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 available in hard copy or on the VUW website at <http://www.victoria.ac.nz/home/study/calendar.aspx>

## 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: <http://www.victoria.ac.nz/home/about/policy/students.aspx>

The policy on Staff Conduct can be found on the VUW website at: <http://www.victoria.ac.nz/home/about/policy/staff.aspx>

## 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; the VUWSA Education Coordinator is 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: <http://www.victoria.ac.nz/home/about/policy/students.aspx>

## 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. 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 students 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:  
<http://www.victoria.ac.nz/home/study/plagiarism.aspx>

## **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](mailto: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](mailto:student-services@vuw.ac.nz)) is available to provide a variety of support and services. Find out more at [http://www.victoria.ac.nz/st\\_services/](http://www.victoria.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](mailto: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, phone (04) 463 6015 or email [manaaki-pihipihinga-programme@vuw.ac.nz](mailto:manaaki-pihipihinga-programme@vuw.ac.nz). To contact the Pacific Support Coordinator, phone (04) 463 5842 or email [pacific-support-coord@vuw.ac.nz](mailto:pacific-support-coord@vuw.ac.nz).