TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI
VICTORIA
UNIVERSITY OF WELLINGTON

School of Economics and Finance

QUAN111
MATHEMATICS FOR ECONOMICS AND FINANCE

Trimester Two 2007

COURSE OUTLINE

Contact Details

Penelope de Boer	EA128/RH319	463-7449/5818	course coordinator
Mohammed Khaled	RH322	463-5787	
NOTE:	EA128 is accessed through EA005.		

Class Times and Room Numbers

L1 (CRN 6107) Mon, Tue, Thu	10:00am – 10:50am	MCLT103
L2 (CRN 6469) Mon, Tue, Thu	4:10pm – 5:00pm	HULT323

The final examination will be in the period 15 October – 10 November 2007

Course Objectives

Students are expected to master differentiation of functions of one and two variables and to apply related techniques to a variety of situations in economics and finance; to become familiar with some mathematical options in *EXCEL*; to understand basic concepts of financial mathematics and use them to calculate interest payments and evaluate investment projects; to recognise linear dependence between vectors, be able to find determinants and inverses of square matrices (up to 4 x 4), to solve linear equations and to model input-output relations in terms of linear systems.

Course Content

SCHEDULE (References to the text, "Mathematics for Business and Economics" 2e)

	Week 1 - Enrol in a Tutorial on July 9			
Mon	L.1	Real Numbers, Operations and Inequalities.		(pp8-16)
Tue	L.2	Absolute Values. Powers.		(pp16-22)
Thu	L.3	Solving Equations and Inequalities.		(pp22-30)
	Week 2 - Tutorial 1			
Mon	L.4	Set Theory: Basic Ideas, Operations, Venn Diagrams.		(pp49-57)
Tue	L.5	Functions and Relations		(pp63-66)
Thu	L.6	Graphing Functions		(pp68-76)
	Week 3 - Tutorial 2			
Mon	L.7	Inverse Functions. Linear Interpolation.	**Ass. 1 due**	(pp76-81)
Tue	L.8	Logarithmic and Exponential Functions.		(pp81-86)

Thu	L.9	Revision of Chapters 1 to 4.		
Week 4 - Tutorial 3				
Mon	L.10	Derivatives.	**Ass. 2 due**	(pp101-105)
Tue	L.11	Differentiation Rules.		(pp105-110)
Thu	L.12	Further Differentation Methods. Elasticities.		(pp110-115)
Week 5 - Tutorial 4				
Mon	L.13	Higher Derivatives. Maxima and Minima.	**Ass. 3 due**	(pp115-121)
Tue	L.14	Global Maxima and Minima. Graphing Functions Again.		(pp122-127)
Thu	L.15	Newton's Method. Maxima and Minima Applications.		(pp127-129)
Week 6 - Tutorial 5				
Mon	L.16	Revision of Calculus of One Variable.	**Ass. 4 due**	(chapter 5)
Tue	L.17	Integration.		(pp130-135)
Thu	L.18	Partial Differentiation.		(pp1165-170)

MID-TRIMESTER TEST THURSDAY 16 AUGUST week 6

6.30 pm – 7.20pm

Covers the course materials for the first sixteen lectures

Week 7 - Tutorial 6				
Mon	L.19	Total Derivatives.	**Ass. 5 due**	(pp170-174)
Tue	L.20	Optimizing Functions of Two Variables.		(pp176-181)
Thu	L.21	Constrained Optimisation and Revision of Calculus of Two Variables.		(pp181-185)
Week 8 - Tutorial 7				
Mon	L.22	Geometric Progressions. Interest.	**Ass. 6 due**	(pp196-203)
Tue	L.23	Non-Annual Compounding. Discounting.		(pp203-206)
Thu	L.24	Investment Appraisal.		(pp209-215)
Week 9 - Tutorial 8				
Mon	L.25	Annuities.	**Ass. 7 due**	(pp215-219)
Tue	L.26	Variations.		(pp219-223)
Thu	L.27	Revision of Financial Mathematics		(Chapter 7)
Week 10 - Tutorial 9				
Mon	L.28	Vectors. Inner Products.	**Ass. 8 due**	(pp235-238)
Tue	L.29	Geometric Interpretation of Vectors.		(pp238-240)
Thu	L.30	Linear Dependence.		(pp40-244)
Week 11 - Tutorial 10				
Mon	L.31	Matrices.	**Ass. 9 due**	(pp244-247)
Tue	L.32	Matrice Multiplication and Determinants.		(pp247-255)
Thu	L.33	More on Determinants.		(pp255-257)

Week 12 - Tutorial 11			**Ass 10 due**
Mon	L.34	Inverting Matrices.	(pp257-261)
Tue	L.35	Solving Linear Equation Systems.	(pp261-267)
Thu	L.36	Input-Output Models and Revision of Linear Algebra.	(pp269-271)

Expected Workload
You should expect to spend 4 hours in class per week (3 lectures and 1 tutorial) and to spend 10 – 11 hours per week reading, studying and completing assignments.

Readings
All students should purchase

Penelope de Boer and Mohammed Khaled, *Mathematics for Business and Economics*, Pearson Prentice Hall, 2007, 2nd edition.

This book contains detailed notes on all of the topics covered in the course; no other textbook is necessary. The Lecture Schedule gives references to the textbook. Here are some optional alternative texts that you could consult:

Mik Wisniewski, *Introductory Mathematical Methods in Economics*, 2nd ed. McGraw-Hill, 1996 (HB135 W815 I)

Frank S. Budnick, *Applied Mathematics for Business, Economics and the Social Sciences*, *4th ed*. McGraw-Hill, 1993 (QA 37.2 B 927 A)

D. Leonard, *Mathematical Methods in Accountancy, Economics and Finance*, Prentice-Hall of Australia, 1980 (QA 36 L581 M)

K. Holden and A.W. Pearson, *Introductory Mathematics for Economists* Macmillan Press, 1983 (London: 2nd ed) (HB 135 H726 I)

D. Zill, E. Beckenbach, I. Drooyan and W. Wooton, *College Mathematics for Students of Business and the Social Sciences,* Wadsworth, 1977 (QA 37.2 C697)

E.T. Dowling, *Mathematics for Economists*, Schaum/McGraw-Hill, 1980, (HB 135 D747 S) has a good selection of worked problems.

If you need to revise basic algebra and calculus, then you could consult the following book, available in the library on Closed Reserve and for purchase through Victoria Book Centre:

Penelope Proffitt, *Maths Made Easy*, Pearson Prentice Hall, 2002.

Materials and Equipment
You must have a calculator that evaluates powers and logs. The recommended model is a modern Casio fx-82. Calculators will be essential for the test and final exam, however they must be silent in operation and have their own power source. Graphics calculators and programmable calculators are permitted, but the advanced features of these models will not be necessary or useful in this course. All programmable calculators must be reset prior to the test and examination.

Assessment Requirements
Your performance will be evaluated on the basis of:

- 30% - Test, Thursday 16 August 6.30 pm (multichoice) and 70% final examination OR
- 100% - final examination OR

- 10% assignments, 20% test and 70% final examination.

whichever is the higher. To pass the course your final mark must be at least 50%. If you are not able to sit the test, the final examination will be weighted 100% towards your final mark. We reserve the right to scale results if necessary to preserve comparability with other years.

There are also weekly assignments (due 3pm on a Tuesday) – these may contribute to your final grade and as such should be completed each week. You should use them as an indicator of your progress and performance.

Assignments should be placed in the appropriate box (by tutor's name), located on Level 2 of Murphy. Do not give them to lecturers or tutors. Assignments will be graded either 0, 1 or 2. A zero grade is given for unsatisfactory work, a one is given for satisfactory work and a two is given for exceptional work. It is expected that most students will score a one for each assignment. Since the marks are indicative rather than quantitative, there is no need for a provision for remarking. Marks will be displayed weekly on Blackboard.

Penalties

Since each assignment only potentially contributes 1% to your final mark, there are no penalties or extensions.

Mandatory Course Requirements

To meet the mandatory course requirements you must:

complete the two computer exercises (the material is available on Blackboard, #1 is due 17 August, #2 is due 5 October).

Communication of Additional Information

Additional information will be conveyed to students via Blackboard. Sometimes you will also be sent emails. These will be sent to the address that you supplied with your enrolment unless you advise otherwise.

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.

For information on the following topics, go to the Faculty's website www.vuw.ac.nz/fca under Important Information for Students:

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