

School of Economics and Finance

QUAN 111
MATHEMATICS FOR ECONOMICS AND FINANCE

Trimester 3, 2011

COURSE OUTLINE

Lecturer/Coordinator: John Randal, RH331, 463-5558
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Administrator: Francine McGee, RH319, 463-5818
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Course website: <http://www.blackboard.vuw.ac.nz/>

Trimester Dates

Teaching Period: Monday 9 January 2012 – Friday 17 February 2012

Examination Period: Monday 20 February – Saturday 25 February 2012 (inclusive)

Withdrawal from Course

1. Your fees will be refunded if you withdraw from this course on or before Friday 13 February 2012.
2. The last date for withdrawal from this course is Friday 20 February 2012. After this date, students forced to withdraw by circumstances beyond their control must apply for permission on an 'Application for Associate Dean's Permission to Withdraw Late' including supporting documentation. The application form is available from either of the Faculty's Student Customer Service Desks.

Class Times and Room Numbers

Lectures

Tuesday and Wednesday, 9:00 – 10.50, KKLT303

Tutorials

Besides the lectures, a total of eight 50-minute tutorials will be offered during the trimester according to the schedule appended to this outline. The available tutorial times and the signing in procedure will be notified through Blackboard: <http://www.blackboard.ac.nz>. You can sign up for tutorials at: <https://signups.victoria.ac.nz/>

Course Content

A brief outline of the course content (topics or themes to be covered), including an indicative schedule for the order of coverage.

Course Learning Objectives

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

1. Carry out basic mathematical operations on numbers, sets and functions
2. Calculate rates of change using derivatives of functions
3. Find derivatives and maximum and minimum values of functions of a single variable
4. Integrate a rate of change function to recover the function in levels
5. Employ partial differentiation to maximise or minimise functions of two or more variables
6. Represent variables as vectors and assess their linear dependence
7. Implement data operations using matrices
8. Solve linear equation systems using matrices, their determinants and inverses

Course Delivery

The course is delivered by two weekly lectures and a total of eight tutorials during the trimester. Each tutorial is a small-group interactive problem solving session, usually covering the prior lecture material.

Expected Workload

You should expect to spend 4 hours in lecture per week, 8 hours in tutorials during the trimester, and about 10 hours per week reading, studying and completing assignments.

Readings

All students should have a copy of the textbook:

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. The books are ordered in increasing levels of advancement.

Ian Jacques, *Mathematics for Economics and Business*, 5th ed., FT-Prentice-Hall, 2006.

Michael Hoy et al., *Mathematics for Economics*, 2nd ed., The MIT Press, 2001.

Knut Sydsaeter and Peter Hammond, *Essential Mathematics for Economic Analysis*, 2nd ed., FT-Prentice-Hall, 2006.

Materials and Equipment

You must have a calculator that evaluates powers and logs. The recommended model is a modern Casio fx-82. Calculators must be silent in operation and have their own power source.

Assessment Requirements

Your performance will be evaluated on the basis of:

40% two 50-minute tests (CLO 1-5) and 60% 2-hour final exam (CLO 1-8), OR
100% 2-hour final exam (CLO 1-8), whichever is the higher.

Test 1 is held in week 3 (26 January), test 2 in week 5 (9 February) and the final exam in the examination period at the end of the trimester; exact times and rooms for the tests are to be announced later on the Blackboard website for the course.

If you are not able to sit the tests for any reason, the weight for the missed items will be added to that for the final exam, e.g. test 20% and exam 80%, if only one test is missed. We reserve the right to scale results if necessary to preserve comparability with other years.

A total of four assignments will also be due (by 5pm on a Tuesday) according to the appended schedule. You should use them as an indicator of your progress and performance. Since aegrotat decisions must be based on internal assessment prior to the final exam, it is important to have this evidence available by completing all assignments and the tests as best as you can, *in case you need to apply for an aegrotat pass*.

Assignments should be placed in the appropriate box (by tutor's name), located on Level 2 of Murphy Building. 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 1 for each assignment. Since the marks are indicative rather than quantitative, there is no need for a provision for remarking. Marks will be displayed on Blackboard.

Quality Assurance 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 processes will be treated as confidential, and the outcome will not affect your grade for the course.

Examinations

The final examination for this course will be scheduled at some time during the period from Monday 20 February – Saturday 25 February.

Mandatory Course Requirements

There are no mandatory course requirements.

Class Representative

A class representative will be elected in the first class, and that person's name and contact details made available to VUWSA, the Course Coordinator and the class. The class representative 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. Sometimes you will also be sent emails. These will be sent to the address you supplied with your enrolment unless you advise otherwise.

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 www.victoria.ac.nz/home/study

Find out about academic progress and restricted enrolment at

<http://www.victoria.ac.nz/home/study/academic-progress.aspx>

The University's statutes and policies are available at 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.aspx> (See Section C).

Further information about the University's academic processes can be found on the website of the Assistant Vice-Chancellor (Academic) at

www.victoria.ac.nz/home/about_victoria/avcademic/default.aspx

AVC (Academic) Website: information including: Conduct, Academic Grievances, Students with Impairments, Student Support

http://www.victoria.ac.nz/home/about_victoria/avcademic/Publications.aspx

Faculty of Commerce and Administration Offices

<http://www.victoria.ac.nz/fca/studenthelp/>

Te Putahi Atawhai

Maori and Pacific Mentoring Programme

http://www.victoria.ac.nz/st_services/tpa/index.aspx

LECTURE SCHEDULE

(Page numbers refer to the text, “Mathematics for Business and Economics” 2nd edn)

Week 1			Pages
Tue 10 Jan	L1	Numbers, Number Operations, Simplifying Expressions	1-16
Tue 10 Jan	L2	Inequalities, Absolute Values, Powers	16-22
Wed 11 Jan	L3	Solving Equalities and Inequalities, Simultaneous Equations	22-30
Wed 11 Jan	L4	Sum and Product notations, Set Theory	31-48, 49-55, 58-62
Fri 13 Jan		Tutorial 1	
Mon 16 Jan		Tutorial 2	
Tue 17 Jan	L5	Functions, Graphing functions, Inverse functions	22-30
Tue 17 Jan	L6	Logarithmic and Exponential Functions, Composite Functions	31-48, 49-55, 58-62
Tue 17 Jan		Assignment 1 due, 5pm	
Wed 18 Jan	L7	Derivatives. Differentiation using rules	101-107
Wed 18 Jan	L8	Further differentiation methods	108-111
Fri 20 Jan		Tutorial 3	
Tue 24 Jan	L9	Application of derivatives: Elasticities. Higher derivatives	111-115
Tue 24 Jan	L10	Concave functions, Graphs using derivatives, Maxima and Minima	117, 120-126
Tue 24 Jan		Assignment 2 due, 5pm	
Wed 25 Jan	L11	More on Maxima and Minima, Applications	128-129
Wed 25 Jan	L12	Integration	130-135, 138-164
Thu 26 Jan		Test 1 – 11.00-11.50	
Fri 28 Jan		Tutorial 4	
Mon 30 Jan		Tutorial 5	
Tue 31 Jan	L13	Partial Differentiation	165-170
Tue 31 Jan	L14	Total Derivatives	170-174
Tue 31 Jan		Assignment 3 due, 5pm	
Wed 1 Feb	L15	Optimizing Functions of Two Variables	176-181
Wed 1 Feb	L16	Constrained Optimisation	181-195
Fri 3 Feb		Tutorial 6	
Tue 7 Feb	L17	Geometric Progressions, Compound Interest	196-203
Tue 7 Feb	L18	Discounting, Present Values	203-206, 209-215, 223-230
Wed 8 Feb	L19	Vectors. Inner Products	235-238
Wed 8 Feb	L20	Orthogonal Vectors, Linear Dependence	238-244
Thu 9 Feb		Test 2 – 11.00-11.50	
Fri 10 Feb		Tutorial 7	
Tue 14 Feb	L21	Matrices	244-250
Tue 14 Feb	L22	Determinants	250-257
Tue 14 Feb		Assignment 4 due, 5pm	
Wed 15 Feb	L23	Inverting Matrices	257-259
Wed 15 Feb	L24	Solving Linear Equation Systems	261-267, 275-288
Fri 17 Feb		Tutorial 8	