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

Course Outline Approval Form

(A separate form must be completed for each course)

Course Outline Approval Forms for the Second Trimester are due at the Faculty's Student & Academic Services Office by Monday 13 July 2009, and should be sent in PDF format to the Administrator, Anthea O'Sullivan: anthea.osullivan@vuw.ac.nz

Course Code (not CRN) QUAN 111 Trimester / Year @ 2 /2009

Course Title Mathematics for Economics + finance

Course Coordinator M. Khaled Extn 5787

Scrutineer Cushla Thomson *This person must be a member of Academic Staff*

Scrutineer: Malathi Velamuri

We confirm that the outline for the above course meets Faculty requirements (as set out in the Course Outline Template), or indicates links to where relevant information is to be found, in respect of the following:

(please tick)

COURSE ORGANISATION

1. Name of School, course code and title, trimester and year ☑

   The correct full title of the course, including all parts such as "Special Topic:" must be given. Please ensure that the trimester given in your outline matches that listed in the Banner system.

2. Staff names & contact details ☑
3. Trimester dates (covering the full assessment period and withdrawal dates) ☑
4. Class times and locations ☑

LEARNING OBJECTIVES & CONTENT

5. Course content ☑
6. Course Learning objectives ☑
7. Course delivery Covered elsewhere in outline ☐
8. Expected workload ☑
9. Group work (if applicable) ☐ n/a
10. Readings, key texts or equivalent materials ☑
11. Any other materials and/or equipment students should obtain ☑

ASSESSMENT & MANDATORY COURSE REQUIREMENTS

12. A clear statement of all assessment requirements, including:
    - (a) Weighting of each assessment task and corresponding learning objectives ☑
    - (b) Critical dates of each piece of work ☑
    - (c) Word limits for larger written pieces of work ☐ n/a
    - (d) Duration of examination including dates of examination period ☑ or N/A
    - (e) Word limits for larger written pieces of work ☐
13. Note re: use of assessed work for quality assurance purposes ☑
14. Statement on penalties ☐
15. Practicum arrangements (if applicable) ☐ n/a
16. Details of mandatory course requirements ☑
17. Statement on the use of Turnitin (if applicable) ☐ or N/A

LINKS FOR COMMON MATERIAL

18. Academic Integrity ☑
19. Details of where to find additional information ☑
20. Statement on General University Policies and Statutes ☑
21. Manaaki Pihipihinga Programme ☑

Signed ..... Cushla Thomson (Course Coordinator) Date 2/7/09	Signed ..... (MALATHI VELAMURI) (Scrutineer) Date 7/7/09 *Note: this person MUST be a member of Academic Staff*

TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI

VICTORIA
UNIVERSITY OF WELLINGTON

School of Economics and Finance

QUAN 111
MATHEMATICS FOR ECONOMICS AND FINANCE

Trimester Two 2009

COURSE OUTLINE

Names and Contact Details

Lecturer:	Cushla Thomson
Email:	Cushla.Thomson@vuw.ac.nz
Office:	RH 303, Phone 463-6855
Office Hours:	*During lecture weeks* 1-6 Monday and Tuesday 11.00-12.00 in EA128 (accessed through EA005) By appointment in RH 303
Lecturer/Course Coordinator:	Mohammed Khaled
Email:	Mohammed.Khaled@vuw.ac.nz
Office:	RH 322, Phone 463-5787
Office Hours:	*During lecture weeks* 7-12 Tuesday 11.00-11.50 in EA128 (accessed through EA005) Wednesdays 12.40-1.30 in RH 322
Administrator:	Francine McGee, RH 319, Phone: 463-5818
Email:	Francine.McGee@vuw.ac.nz
Duty Tutor:	Sara Willan EA005, Monday 1.00-2.00 (from 2nd week of trimester)

Trimester Dates

Teaching Period: Monday 13 July to Friday 16 October 2009
End of Year Study Period: Monday 19 October to Monday 26 October 2009
Examination Period: Tuesday, 27 October to Saturday 14 November 2009 (inclusive)

Note: Students who enrol in courses with examinations should be able to attend an examination at the University at any time during the formal examination period.

Withdrawal dates: Information available via
http://www.victoria.ac.nz/home/admisenrol/payments/withdrawlsrefunds.aspx

Lecture Times and Room Numbers

(CRN 6017)	Tuesday and Wednesday	10.00am – 10.50am	EALT006
(CRN 6469)	Monday and Tuesday	12.00pm – 12.50pm	EALT006

Tutorials

Besides the lectures, you will need to attend a 1-hour tutorial per week beginning from the *second* week of the trimester. To view and sign up to tutorials go to https://signups.victoria.ac.nz/. Tutorial sign up closes on Friday 17 July at 5.00pm.

Course website: http://www.blackboard.vuw.ac.nz/

Course Content

A provisional lecture schedule with contents appears at the end of this course outline.

Course Learning Objectives

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

C1 use numbers, sets and functions, and some mathematical functions in EXCEL
C2 calculate rates of change using derivatives of functions
C3 find derivatives and maximum and minimum values of functions of a single variable
C4 integrate a rate of change function to recover the function in levels
C5 use partial differentiation to maximise or minimise functions of two or more variables
C6 understand basic concepts of compounding and discounting, and use them to calculate interest payments and present values
C7 represent variables as vectors and assess their linear dependence
C8 implement data operations using matrices
C9 solve linear equation systems using matrices, their determinants and inverses.

Expected Workload

You should expect to spend 3 hours in class per week (2 lectures and 1 tutorial) 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.
> Howard Anton, *Calculus with Analytic Geometry*, New York: Wiley, 1995.
> 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.

If you need to revise basic algebra and calculus, then you could consult the following book:
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 their own power source. Graphics calculators and programmable calculators are permitted during the course but not in the test or exam.

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

- 30% Test (multi-choice) on and 70% final exam, OR
- 100% final exam, whichever is higher

To pass the course you need to fulfil the mandatory course requirements listed below, and score at least 50% overall course mark as indicated above. If you are not able to sit the test for any reason, 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.

The test will be held on **Thursday 20th August 2009, 6.30pm – 7.20pm** and will cover the first 10 lectures of the course.

There are also weekly assignments (due by 3pm on a Monday) – each of these may contribute to your mandatory course requirements and as such should be completed each week. 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 test 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 weekly on Blackboard.

- *DO* head your assignments with
  - your **NAME**
  - your **TUTORS NAME**, AND
  - the **TIME** and **DAY** of your tutorial
- ***DO* staple all sheets together**
- *DO NOT* fold your assignments or seal them shut
- *DO NOT* put your work in a plastic sleeve
- Submit into your tutor's assignment boxes next to (Murphy) MY221

Students with examinations are obliged to be present at university until the end of the examination period. Examination dates for trimester two: **Tuesday, 27 October to Saturday 14 November 2009 (inclusive).**

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 Tuesday 27 October to Saturday 14 November 2009.

Mandatory Course Requirements
To meet the mandatory course requirements you must:

- score a total of at least 5 points in at least 5 of the 10 regular assignments,
- complete at least one of the two computer exercises (the material will be made available on Blackboard, and are to be submitted into the designated folder on Blackboard, #1 due on 17 August, and #2 on 5 October),
- sit the final exam.

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.

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
http://www.victoria.ac.nz/home/about/policy/academic.aspx

Faculty of Commerce and Administration Offices
http://www.victoria.ac.nz/fca/studenthelp/Contactus.aspx

Manaaki Pihipihinga Programme
http://www.victoria.ac.nz/st_services/mentoring/

LECTURE SCHEDULE

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

Week 1 - Enrol in a Tutorial this week			**Pages**
Mon	L.1	Numbers, Number Operations, Simplifying Expressions.	(1-16)
Tue	L.2	Inequalities, Absolute Values, Powers.	(16-22)
Week 2 - Tutorial 1			
Thu	L.3	Solving Equalities and Inequalities, Simultaneous Equations.	(22-30)
Mon	L.4	Sum and Product notations, Set Theory.	(31-48, 49-55, 58-62)
Week 3 - Tutorial 2 - Ass. 1 due			
Tue	L.5	Functions, Graphing Functions, Inverse Functions.	(63-66, 69-81)
Thu	L.6	Logarithmic and Exponential Functions, Composite Functions.	(81-100)
Week 4 - Tutorial 3 - Ass. 2 due			
Mon	L.7	Derivatives. Differentiation using Rules.	(101-107)
Tue	L.8	Further Differentiation Methods.	(108-111)
Week 5 - Tutorial 4 - Ass. 3 due			
Mon	L.9	Application of derivatives: Elasticities. Higher Derivatives.	(111-115)
Tue	L.10	Concave functions, Graphs using derivatives, Maxima and Minima.	(117, 120-126)
Week 6 - Tutorial 5 - Ass. 4 due			
Thu	L.11	More on Maxima and Minima, Applications.	(128-129)
Mon	L.12	Integration.	(130-135, 138-164)

MID-TRIMESTER TEST

THURSDAY 20TH AUGUST, 6.30pm – 7.20pm (Rooms to be announced)

Covers the course materials for the first 10 lectures

Week 7 - Tutorial 6 - Ass. 5 due			
Tue	L.13	Partial Differentiation.	(165-170)
Mon	L.14	Total Derivatives. Implicit Differentiation.	(170-174)
Week 8 - Tutorial 7 - Ass. 6 due			
Tue	L.15	Optimizing Functions of Two Variables.	(176-181)
Thu	L.16	Constrained Optimisation.	(181-195)

Week 9 - Tutorial 8 - Ass. 7 due

Mon	L.17	Geometric Progressions, Compound Interest.	(196-203)
Tue	L.18	Non-Annual Compounding, Discounting.	(203-206, 223-230)

Week 10 - Tutorial 9 - Ass. 8 due

Mon	L.19	Vectors. Inner Products.	(235-238)
Tue	L.20	Orthogonal Vectors. Linear Dependence.	(238-244)

Week 11 - Tutorial 10 - Ass. 9 due

Mon	L.21	Matrices.	(244-250)
Tue	L.22	Determinants.	(250-257)

Week 12 - Tutorial 11 - Ass. 10 due

Mon	L.23	Inverting Matrices.	(257-259)
Tue	L.24	Solving Linear Equation Systems.	(261-267, 275-288)

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