TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI

VICTORIA
UNIVERSITY OF WELLINGTON

School of Economics and Finance

ECON 434: ECONOMIC DYNAMICS

Trimester 1, 2016

COURSE OUTLINE

Prescription

Economic applications of discrete-time deterministic and stochastic optimal-control and dynamic-game models..

Course Learning Objectives

The main objective of this course is to teach economic dynamics in the context of conflicts and optimal control. The conflicts will be modelled as static and dynamic games.
Students passing this course should be able to

- compute equilibria in simple static games;
- understand state-space models;
- build simple optimal-control type economic models;
- solve basic dynamic games.

Course Content

Lecture	Date	Topic	Sections
1	3/03	Games in extensive form. Additional concepts about information. Games in normal form.	2.2.1-2.2.3; 2.3.1--2.3.5; 2.4.1-2.4.3
2	10/03	Concave m-person games	3.4.1-3.4.9
3	17/03	Repeating a game in normal form.	5.2.1-5.2.6
4	24/03	The folk theorem. Memory-strategy equilibria in a repeated concave game	5.3.1-5.3.2; 5.4.1--5.4.3
5	31/03	Multistage control systems. *Consider the Bellman and Riccati equations for* $m = 1$	6.1.1-6.1.4 *6.4.3; 6.7*
6	7/04	Description of multistage games in a state-space. Information structure.	6.2 6.3
7	14/04	Strategies and equilibrium solutions.	6.4.1-6.4.4
8	21/04	A feedback-Nash equilibrium (FNE) solution to a fishery-management model.	6.5.1-6.5.3
9	05/05	FNE in infinite-horizon discounted games.	6.6.1-6.6.2
10	12/05	Linear-quadratic games.	6.7.1-6.7.3
11	19/05	Equilibria in a class of memory strategies for infinite-horizon games.	6.9.1-6.9.2
12	26/05	A macroeconomic problem modelled as a dynamic game.	⅁𝔼 6.12

Trimester Dates

Teaching Period: Monday 29th February – Friday 3rd June

Study Period: Monday 6th June – Thursday 9th June
Examination Period: Friday 10th June – Wednesday 29th June (inclusive)

Withdrawal from Course

1. Your fees will be refunded if you withdraw from this course on or before Friday 11th March 2016.

2. The standard last date for withdrawal from this course is Friday 13th May 2016 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 or online.

Names and Contact Details

Lecturer: Jacek B Krawczyk, RWW215, phone 4635352
Contact by email preferred at: J.Krawczyk@vuw.ac.nz

Course Administrator: Rachel Zhang, RWW First Floor, phone 4636418
Contact by email preferred at: Rachel.Zhang@vuw.ac.nz

Class Times and Room Numbers

Lecture: Thusday, 9:30-11:20 RWW 127
Consultation time: TBA, RWW 215

Course Delivery

The course is delivered at RWW 127 as a series of two 50 minute sessions held once a week for the duration of the trimester.

Readings

The text for this course is:
- Haurie, J. B. Krawczyk & G. Zaccour "Games and dynamic games", published by World Scientific Publishing/Imperial College Press, 2012.

The book contents and introductory chapters are available at
www.vuw.ac.nz/staff/jacek_krawczyk/Intro.html

Complementary books, which might provide useful alternative explanations and practice exercises, are:
- D. Luenberger. "Introduction to Dynamic Systems: Theory, Models and Applications".
- T. Ba͵sar and G. J. Olsder. "Dynamic Noncooperative Game Theory". 1995
- P. Whittle. "Optimal Control: Basics and Beyond". Closed Reserve.
- L. Ljungqvist & T.J. Sargent. "Recursive Macroeconomic Theory".

The VUW library has a web page that contains detailed information about available library resources. The key words for you to try are game theory, dynamic games, optimal control. The URL is //www.vuw.ac.nz/library

Mandatory course requirements
There are no mandatory requirements for this course.

Expected Workload
As a guideline, students are expected to spend 8 hours a week on this course including class contact time and a combined balance for the mid-trimester break, study week and the examination period. This may however vary considerably for individual students.

Assessment
The Assessment Handbook will apply to all VUW courses: see http://www.victoria.ac.nz/documents/policy/staff-policy/assessment-handbook.pdf.
- Two assignments will be issued approximately 10 days ahead of their respective deadlines: 6 May and 3 June. The assignments are to be handed in to lecturer or Debbie Turner by 16.00 noon on each of the above dates.
- Your course mark will be a weighted average of two assignments: 14% & 16% and the final exam: 70%
- Final 2-hr examination is open book; all questions are compulsory.

Examinations
Friday 10th June – Wednesday 29th June (inclusive)

If you cannot complete an assignment or sit a test or examination, refer to www.victoria.ac.nz/home/study/exams-and-assessments/aegrotat

Penalties
Late assignments will be given a grade "0".

Group Work
N/A

Use of Turnitin
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 compares submitted work with a very large database of existing material. At the discretion of the Head of School, handwritten work may be copy-typed by the School and submitted to Turnitin. A copy of submitted materials will be retained 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.

Materials and Equipment
You do not need any special equipment for this course. All numerical examples provided at lectures as well as the questions to be answered in assignments can be answered on a sheet of paper and using a pen (through calculus and algebra). However, knowledge of (and access to) Matlab or Maple will be of help to manipulate some more complex formulae. In examinations, you are allowed to use non-programmable calculators.

<u>Student feedback</u>

Student feedback on University courses may be found at www.cad.vuw.ac.nz/feedback/feedback_display.php.

<u>Class Representative</u>

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.

<u>Communication of Additional Information</u>

Additional information will be conveyed to students via Blackboard and/or email.
Emails may be sent to the address that you supplied with your enrolment; but they may also be sent to your SCS email address, which is your official university email address.

You should keep an eye on both email addresses.
Link to general information. For general information about course-related matters, go to
http://www.victoria.ac.nz/vbs/studenthelp/general-course-information

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Note to Students

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 academic audit. The findings may be used to inform changes aimed at improving the quality of VBS programmes. All material used for such processes will be treated as confidential, and the outcome will not affect your grade for the course.

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