

Econ 377
Semester 1, 2007

University of Otago
Gerald Willmann

Mathematical Economics: Syllabus

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Course description:

The principal aim of this course is to extend your facility with those methods of mathematics needed to pursue economic analysis at a more advanced level. By the end of the course you should have extended your knowledge to include the technique of optimization under inequality constraints, the analysis of dynamic economic models, in particular differential and difference equations and dynamic optimization (optimal control theory), as well as correspondences and fixed point theorems used in general equilibrium analysis.

Prerequisites:

The prerequisite for this class is Econ 270, i.e. the second year Introduction to Mathematical Economics paper. Feel free to talk to me if you have questions on this.

Textbook:

The required text for this class is *Further Mathematics for Economic Analysis* by Knut Sydsæter, Peter Hammond, Atle Seierstad, and Arne Strøm, published by Prentice Hall. This is the follow-up to *Essential Mathematics for Economic Analysis* by the first and second author which is one possible book to review Econ 270. Also, access to a mathematics computer software package such as Mathematica, Maple, or Mupad might come in handy.

Logistics:

- The class meets three times a week: M at 12, T and Th at 13 in PHTYG.
- website: <http://willmann.bwl.uni-kiel.de/~gerald/econ377>
- Students with particular needs should see me at the beginning of the course.

Outline:

- The concave-programming problem and the Kuhn-Tucker theorem (Ch 3).
- Comparative statics using the envelope theorem (Ch 3).
- A review of integration (Ch 4).
- Differential Equations (Ch 5-7).
- Calculus of Variation (Ch 8).
- Optimal control theory (Ch 9, 10).
- Difference Equations (Ch 11).
- Discrete Time Optimization (Ch 12).
- Correspondences and fixed points (Ch 14).

Assessment:

- assignments: 30%
- final exam: 70%

STUDENTS SHOULD MAKE SURE THAT ALL SUBMITTED WORK IS THEIR OWN. Any student found responsible for dishonest practice (for example, copying, the use of unauthorised material in tests, etc) in relation to any piece of work submitted for assessment shall be subject to the University's dishonest practice regulations which may result in various penalties, including forfeiture of marks for the piece of work submitted, a zero grade for the paper or in extreme cases exclusion from the University. Plagiarism is a form of dishonest practice. Plagiarism is defined as the copying or paraphrasing another's work, whether intentionally or through failure to take proper care, and presenting it as one's own. (See University of Otago Calendar 2006 page 193.) In practice, this means plagiarism includes any attempt in any piece of submitted work to present as one's own work, the work of another (whether of another student or published authority). Any student found responsible for plagiarism shall be subject to the university's dishonest practice regulations as outlined above.

Class Representatives:

The class representative system is an avenue for encouraging communication and consultation between staff and students involved in a particular paper or course of study at the University of Otago. It provides students with a vehicle for communicating their views on matters associated with the teaching and delivery of their paper or course of study. It provides staff with the opportunity to communicate information to and gain

constructive feedback from students. It contributes to the development of a sense of community within a Department/School/Faculty and it adds a further dimension to the range of support services that the University of Otago offers its students. The School of Business fully supports the class representative system. Volunteers to act as class representatives for this paper will be called early in the semester. The OUSA then invites all class representatives to a training session, conducted by OUSA, about what it means to be a class representative and some of the possible procedures for dealing with issues that arise. They also provide information on the services that OUSA offers and the role OUSA can play in solving problems that may occur. The OUSA also provides ongoing support to class representatives during the semester. School of Business staff will also meet during the semester with the class representatives for this paper to discuss general issues or matters they wish to have considered

Disclaimer:

While every effort has been made to ensure that the information contained in this document is accurate, the information is subject to change. Changes will be notified in class and/or tutorials. Students are encouraged to check notice boards, etc for any changes. It is your responsibility to be informed.