ECON 884: APPLIED GAME THEORY

MACQUARIE UNIVERSITY
DIVISION OF ECONOMIC AND FINANCIAL STUDIES
UNIT OUTLINE

SEMESTER 2, 2007

TEACHING STAFF

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Prerequisite: no prerequisite is imposed, however, a knowledge of intermediary level Microeconomics is advisable.

Students in this unit should read this unit outline carefully at the start of semester. It contains important information about the unit. If anything in it is unclear, please consult one of the teaching staff in the unit.

ABOUT THIS UNIT

Objective: With the recent development of Experimental economics as a refutation tool, Game theory has emerged as an important field providing Economists with tools to deal with strategic and social interactions. The aim of this course is to introduce students to the methodology of Game theory with an emphasis on applications to real economics issues. The first half of the course will be more lecture-based in order to give the students the necessary tools to comprehend the wide literature on the subject. The second half will involve readings on a variety of topics where Game theory and Experimental economics constitute a relevant tool of analysis.

It is recommended that students attending this unit have a knowledge of Microeconomics at the intermediary level and be familiar with algebra and optimization.

- **One three hours lecture per week to be held every Wednesday at 6pm in W5C234**

REQUIRED AND RECOMMENDED TEXTS AND/OR MATERIALS

- No textbook is prescribed for this unit, a complete set of lecture notes will be available on WebCT. The students are encouraged to refer to the following texts list for supporting material and as recommended by the lecturer throughout the progress of the unit.

- RECOMMENDED TEXTS:

Bierman H. Scott, Fernandez L., (1997), *Game Theory with Economic Applications*, 2nd ed., Addison Wesley.

Binmore K., (1991), *Fun and Games: A text on Game Theory*, D.C. Heath.

Dixit A.K., Skeath S., (1999), *Games of Strategy,* W.W. Norton & Co, New York.

Fudenberg D., Tirole J., (1998), *Game Theory*, 6th ed., MIT press.

Gibbons R., (1992), *A primer on Game Theory*, Prentice-Hall, Pearson Education Ltd, Harlow, England.

Kreps D., (1990), *Game Theory and Economic Modelling (Clarendon Lectures in Economics)*, Oxford University Press, USA.

Rasmusen E., (2001), *Games and Information: An Introduction to Game Theory*, 3rd ed., Blackwell Publishers.

Varoufakis Y., Hargreaves-Heap S., (2004), *Game Theory: A critical Introduction*, Routledge.

UNIT WEB PAGE

- The web page for this unit can be found at https://online.mq.edu.au/webct/ticket/ticketLogin?action=print_login&request_uri=/webct/homearea/homearea%3

LEARNING OUTCOMES

- INDICATIVE TOPICS DEVELOPED IN THE LECTURES

  Topic1: Introduction and Revisions on Decision under risk

  Topic 2: Static games of complete information (normal form games and Nash Equilibrium)

  Topic 3: Dynamic games of complete information (extensive form games, backward induction and subgame perfect equilibrium)

Topic 4: Application of multi stage games with observed actions (Rubinstein and Stahl model)

Topic 5: Static games of incomplete information (Bayesian games and Bayesian Equilibrium)

Topic 6: Repeated games (Folk theorem, renegotiation proofness, folk theorem with imperfect public information)

Topic 8: Dynamic games of incomplete information (perfect Bayesian equilibrium, Sequential equilibrium, trembling hand perfection)

Topic 7: Reputation effects

Topic 9: Introduction to experimental economics and the Ultimatum bargaining game results

Topic 10: Others regarding preferences and application in game theory.

Topic 11: Public goods, theory and experimental results

RELATIONSHIP BETWEEN ASSESSMENT AND LEARNING OUTCOMES

ASSESSMENT:

- **1 project (40%)**

- **A final examination (60%)**

The project consists in either designing an Economic Experiment on a topic imposed by the Lecturer or writing a game theoretic model or survey on a topic left free to the students to choose after discussion with the lecturer.
For their project, students will be assessed on the quality of the project itself and on a class presentation to be held in week 12. The presentation, using data projector, is expected to last about 20 minutes. There is no word limits imposed to the project itself. More details about the project will be given in the Lecture on week 5.

- **Assignments submitted late will NOT BE ACCEPTED.** If any assignment cannot be delivered by the due date because of illness or unavoidable disruption, as described in the rules for obtaining Special considerations for the final examination an extension may be granted by the lecturer in charge.

The University Examination period in Second Half Year 2007 is from November 14th to November 30th.

You are expected to present yourself for examination at the time and place designated in the University Examination Timetable. The timetable will be available in Draft form approximately eight weeks before the commencement of the examinations and in Final form approximately four weeks before the commencement of the examinations. http://www.timetables.mq.edu.au/exam

The only exception to not sitting an examination at the designated time is because of documented illness or unavoidable disruption. In these circumstances you may wish to consider applying for Special Consideration. Information about unavoidable disruption and the special consideration process is available at http://www.reg.mq.edu.au/Forms/APSCon.pdf

If a Supplementary Examination is granted as a result of the Special Consideration process the examination will be scheduled after the conclusion of the official examination period. (Individual Divisions may wish to signal when the Division's Supplementaries are normally scheduled.)

You are advised that it is Macquarie University policy not to set early examinations for individuals or groups of students. All students are expected to ensure that they are available until the end of the teaching semester, that is the final day of the official examination period.

PLAGIARISM

The University defines plagiarism in its rules: "Plagiarism involves using the work of another person and presenting it as one's own." Plagiarism is a serious breach of the University's rules and carries significant penalties. You must read the University's practices and procedures on plagiarism. These can be found in the *Handbook of Undergraduate Studies* or on the web at: http://www.student.mq.edu.au/plagiarism/

The policies and procedures explain what plagiarism is, how to avoid it, the procedures that will be taken in cases of suspected plagiarism, and the penalties if you are found guilty. Penalties may include a deduction of marks, failure in the unit, and/or referral to the University Discipline Committee.

UNIVERSITY POLICY ON GRADING

Academic Senate has a set of guidelines on the distribution of grades across the range from fail to high distinction. Your final result will include one of these grades plus a standardised numerical grade (SNG).

On occasion your raw mark for a unit (i.e., the total of your marks for each assessment item) may not be the same as the SNG which you receive. Under the Senate guidelines, results may be scaled to ensure that there is a degree of comparability across the

university, so that units with the same past performances of their students should achieve similar results.

It is important that you realise that the policy does not require that a minimum number of students are to be failed in any unit. In fact it does something like the opposite, in requiring examiners to explain their actions if more than 20% of students fail in a unit.

The process of scaling does not change the order of marks among students. A student who receives a higher raw mark than another will also receive a higher final scaled mark.

For an explanation of the policy see
http://senate.mq.edu.au/rules/Guidelines2003.doc or
http://senate.mq.edu.au/rules/detailedguidelines.doc.

STUDENT SUPPORT SERVICES

Macquarie University provides a range of Academic Student Support Services. Details of these services can accessed at http://www.student.mq.edu.au.