

ECO326 H1F – SYLLABUS
ADVANCED ECONOMIC THEORY (MICRO)
SUMMER 2012

Course Information:

Instructor: Kevin Fawcett
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Office Hours: TBA

Teaching Assistant: TBA
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Lectures: Tuesday/Thursday 6:10 – 8:00 pm, SS 1084

Tutorials: Tuesday/Thursday 8:10 – 9:00 pm, SS 1084

Note: There will be no tutorial the first day of class.

Description:

Game theory is the analysis of strategic interaction between utility maximizing decision makers. Most of today's economic research is based heavily on game theoretic reasoning. As such, it is a core field of economic theory. Game theory emerged as a branch of mathematics, and it is still quite mathematical. Accordingly, even though we will focus on the conceptual analysis of games, you should be at ease with mathematical notation and formal arguments. The class also requires some knowledge of probability theory and calculus, and you should have a solid foundation in microeconomics.

Textbook:

The required text for the course is *An Introduction to Game Theory* by Martin J. Osborne. All course material and practice problems are in this text. The text can be purchased at the University of Toronto Bookstore. Students who are looking for supplementary texts on Game Theory should feel free to contact the instructor.

Evaluation:

Your mark will consist of a mid-term test and a final exam. They will count for 40 % and 60 %, with more weight assigned to the better mark of the two exams. The mid-term exam will be held on Tuesday, June 5, 2012, in SS 1084 from 6:10 – 8:10 pm. Students who miss the mid-term MUST provide a medical note to the instructor and must write a MANDATORY make-up exam, which will be scheduled on Friday, June 8, 2012 at a time TBA. Students who miss the mid-term cannot transfer the weight to the final exam.

The date and location of the final exam are TBA. The final exam will be cumulative and will be two hours in length.

Assignments:

The best method to understand the course material and prepare for the mid-term and final exams is to practice. A new assignment will be posted before each tutorial. Selected problems will be taken up in the tutorial. Even though assignments are not graded, students should attempt all questions prior to the tutorial. In order to properly understand the definitions, concepts and problems, please keep up with the assigned work. Solutions to selected problems can be found on Professor Osborne's website:

<http://www.economics.utoronto.ca/osborne/igt/index.html>

Course Outline:

1. Introduction

- 1.1 What is Game Theory?
- 1.2 Preliminaries: Some Mathematical Notation

2. Strategic Games with Perfect Information (ch. 2)

- 2.1 Strategic games
- 2.2 Nash equilibrium
- 2.3 Best response functions
- 2.4 Dominated actions
- 2.5 Illustrations: Bertrand and Cournot competition, auctions, electoral competition

3. Mixed Strategy Nash Equilibrium (ch. 4)

- 3.1 Mixed or randomized strategies
- 3.2 Mixed strategy Nash equilibrium
- 3.3 Dominated actions when strategies are mixed
- 3.4 Illustrations: expert diagnosis, reporting a crime

4. Extensive Games with Perfect Information (ch. 5)

- 4.1 Extensive games with perfect information
- 4.2 Strategies and outcomes
- 4.3 Backwards induction
- 4.4 Strategic-form representation and Nash equilibrium of extensive games
- 4.5 Subgame perfect equilibrium
- 4.6 Illustrations: ultimatum game, Stackelberg competition, bargaining (ch. 16)

5. Strategic Games with Imperfect Information (ch. 9)

- 5.1 Beliefs and types
- 5.2 Bayesian Nash equilibrium
- 5.3 Illustrations: BoS and auctions with incomplete information