Advanced Micro: Game Theory and Applications
Syllabus, Fall 2015

Department of Economics, Central European University

Monday 3:30-5:30pm, usually FT 509
2 Credits

www.personal.ceu.hu/staff/Adam_Szeidl/gametheorycourse/gametheorycourse.htm

Instructor: Professor Adam Szeidl
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Office hours: Thurs 4-5pm, 414 Nador 11., sign up online

This course presents the foundations of, and selected topics in, game theory. We will review basic definitions and equilibrium concepts, and develop applications ranging from auctions to political economy and industrial organization. We will also discuss evidence from experimental games. The goal is to develop a structured way of thinking about strategic interactions, which students can use in their own work.

Game theory is a formal subject with theorems and proofs. However, it is used in all fields of economics, and I particularly encourage students with applied interests to attend. The material covered is useful for diverse fields including psychology and economics, industrial organization, and macroeconomics.

Requirements
The course is intended for second-year MA and first-year PhD students. While no prior knowledge of game theory is assumed—so that in principle first-year MA students can also take the course—familiarity with the first year MA micro sequence is useful. Requirements consist of homework assignments and a final exam. Students are encouraged to work in groups on the homework assignments, but each student must submit her or his own solution. Your course grade will be determined as follows:

Assignments 50%
Final exam 50%

Learning outcomes
By the end of this course, students will have: 1. Knowledge and understanding of game theory at a level required to read current research in economics in applied theory. 2. The ability to use, modify and extend existing game theory models in the students’ own research. 3. The ability to develop game theory models for the student’s own research in
applied theory. 4. The ability to read current research in game theory with the help of reference texts.

**Teaching assistant and office hours**

The teaching assistant for the course is Judit Rariga, who has office hours TBA. I have office hours Thursday 4-5pm, 414 Nador 11. Please see Judit for questions about the problem set; I am happy to answer broader questions about the material. If you would like to see me, please sign up online, using the link on my homepage, for my office hours.

**Final**

The final exam is during the week of December 7-11.

**Texts**

The textbook for the course is


Other useful readings include:

Osborne M. and A. Rubinstein, *A Course in Game Theory* (OR) – downloadable from the authors’ website!

Kagel and Roth, editors, *The Handbook of Experimental Economics*, Introduction

Fudenberg, D. and D. Levine, *The Theory of Learning in Games*,

Schelling, T., *The Strategy of Conflict*,

Camerer C., *Behavioral Game Theory: Experiments in Strategic Interaction*,

Krishna, V. *Auction theory*.

For many classes, lecture notes will also be made available.

**Course outline and readings (subject to change as the course develops)**

**1. Games in strategic form**

Decision theory vs game theory, issues with equilibrium analysis, Nash equilibrium, existence, learning.

FT 1, 2.1. Supplement: FL ch. 1, 3.1-3.3, Strategy of Conflict Ch. 2

**2. Games in extensive form**

Dynamic games, game theory and experiments, self-confirming equilibrium, backward induction, subgame-perfect equilibrium.

3. Applications of multistage games with observed actions
War of attrition, patent races, bargaining. Political economy of institutional reform.
FT 4.1 – 4.5

4. Introduction to repeated games
Folk theorems, the evolution of cooperation, theory versus experiments in repeated games. Fairness-based theories of cooperation.
FT 5.1 – 5.3. excluding 5.1.3.

5. Static games of incomplete information
Bayesian equilibrium.
FT 6.1-6.7.

6. Auctions
Krishna 1-4.

7. Dynamic games of incomplete information
Signalling games, cheap talk. Sequential equilibrium and perfect Bayesian equilibrium. Reputation effects and the chain store game.