Description of the course:
The course introduces the main concepts and tools of game theory with the aim to enable
you to read original game-theoretic literature and to prepare you to do research in the
field. You will learn how to represent an economic situation as a game (part 1) and how to
analyze it using different equilibrium concepts proposed in the literature, the prominent
one being the Nash equilibrium (parts 2 and 3). In part 4, we will concentrate on strategic
interaction under incomplete information and modify the Nash equilibrium concept to
include the uncertainty of the players about some of the parameters of the game. Often, an
equilibrium concept fails to provide a unique solution to the game. In part 5, we will deal
with the problem of indeterminacy in games in extensive form and introduce refinements
of the Nash equilibrium.

Requirements:
Homework assignments will be distributed during the term. A final exam will be held in
the last week of classes.

Recommended books:
Massachusetts.
University Press, New York, Oxford. (Chapters 13, 14)

Note: I do not expect you to buy or to study all three game-theory books – you are at
liberty to choose the one that suits you most or even to use a different graduate level game
theory book. (E.g., Mas-Collel also contains most of the game-theoretic material we are
going to cover. However, check your understanding before settling for this option!).
However, you are expected to know and understand the material at the level at which
it is presented in these books. I also expect you to read and try to understand the
papers which appear on the syllabus. Many of them are the original versions of well
known results you will find in the text books. You should pay special attention to the
discussion of the assumptions and of the results. Many of these „classical“ papers in game
theory are collected in the book „Classics in Game Theory“.

Course materials:
The lecture slides are available on line at:
http://www.arts.cornell.edu/econ/guerdjikova/
(click on Teaching and choose ECON 611).
1. **Formal Representation of Games**
   a. Games in extensive form
   b. Concepts of strategies
   c. Games in strategic form
   Issue 20 of Games and Economic Behavior (1997) is devoted to imperfect recall.

2. **Dominance Arguments**
   a. Dominant strategy equilibrium
   b. Iterative elimination of dominated strategies
   c. Rationalizable strategies

3. **Nash Equilibrium**
   a. Definition, existence and uniqueness of a Nash equilibrium
   b. Trembling-hand perfect equilibrium
   c. Proper equilibrium

4. **Games with Incomplete Information**
   a. Bayesian decision theory
   b. Bayes-Nash equilibrium

5. **Refinements of the Nash Equilibrium**
   a. Subgame perfect equilibrium
   b. Perfect Bayesian equilibrium
   c. Sequential equilibrium