

Game Theory
XMBA 296 and EWMBA 211
Summer 2016
Course Outline

I. Contact information

Instructor: Shachar Kariv

- Office: 505 Evans Hall (Department of Economics)
- E-mail: kariv@berkeley.edu
- Phone: 510-643-0712
- Skype: shachar_kariv
- Web page: <http://emlab.berkeley.edu/~kariv/>

GSI: Aluma Dembo

- E-mail: a.dembo@berkeley.edu

II. General information

The course presents some of the main topics in game theory. Game theory is about what happens when decision makers (spouses, workers, managers, presidents) interact. In the past fifty years, game theory has gradually become a standard language in economics. The power of game theory is its generality and (mathematical) precision, and because game theory is rich and crisp, it is applicable to many business situations.

Nevertheless, the spread of game theory outside of economics has suffered because of the misconception that it requires a lot of fancy math. A typical question is what is game theory good for, or more precisely, is game theory meant to predict what decision makers do, to give them advice, or what?! The answer is that (only) the tools of analytical game theory can be used to predict, postdict (explain), and prescribe, taking into account that even if game theory is not always accurate, descriptive failure is prescriptive opportunity.

As Robert J. Aumann (2005 Nobel Economics Laureate “for having enhanced our understanding of conflict and cooperation through game-theory analysis”) said “... game theory is a sort of umbrella or ‘unified field’ theory for the rational side of social science, where ‘social’ is interpreted broadly, to include human as well as non-human players (computers, animals, plants).” We will show that game theory is not just a normative theory (how people ought to choose), but also as a descriptive theory (how people actually choose) and even as a prescriptive theory (as a practical aid to choice).

III. Reading material

The class will rely on handouts that will be given for each class and also be available for downloading in PDF format from the course web page. The notes will contain all the material for the course.

These books are lighter reading on business and game theory:

- Avinash Dixit and Barry Nalebuff, **The Art of Strategy**. WW Norton.
- Adam Branderburger and Barry Nalebuff, **Co-opetition**. Currency Doubleday.

There are also many more excellent game theory textbooks around. The only recommended textbook is:

- Osborne Martin, **Introduction to Game Theory**. Oxford University Press.

The book presents the main topics of game theory at a level suitable for our purposes and emphasizes the theory's foundations as well as recent topics in game-theoretic research. It provides precise definitions and full proofs of a broad range of results.

IV. Problem sets

The course will rely heavily on problem sets. Each segment a problem set will be assigned and will generally be due the following block. The problem sets are meant to be learning tools and thus will be not counted for the course grade. All questions in the problem sets are a required material. Please work on the problem sets with each other. Answer keys will be distributed (but will not be available for downloading from the course web page).

V. Grading

The requirements for a grade in the class is a final take-home exam. The exam will test your basic knowledge in the course material and the ability to apply this material to new problems. Further details will be given later in the semester.

VI. Office hours

Online by appointment. Further details will be given in the first lecture. When you are on campus, feel free to drop by my office (505 Evans Hall) to ask questions, or even just to introduce yourself and to chat. You can e-mail us any question, and we will try to respond promptly. In case you have any trouble, there are plenty of opportunities for help. We would also be happy to discuss with you any issues beyond the course work, not necessarily of game-theoretic substance.