

EC/PS 172: GAME THEORY

- **INSTRUCTORS:** Federico Echenique and Pietro Ortoleva
Lectures: TuTh 10:30-12am
Baxter Lecture Hall
Class homepage:
<http://www.hss.caltech.edu/~ortoleva/ec-ps172/>
- **TAs:** Emerson Melo (emelos@hss) and Salvatore Nunnari (snunnari@hss)
Office Hours: TBA
- **READINGS.** The required text is “An introduction to game theory,” by Martin J. Osborne; 2003 Oxford University Press. Some students also find “Game Theory for Applied Economists,” by Robert Gibbons (Princeton University Press, 1992) useful. Two more advanced texts are “A Course in Game Theory,” by Martin J. Osborne and Ariel Rubinstein (MIT press, 1994) and “Game Theory” by Drew Fudenberg and Jean Tirole (MIT press, 1991).
- **GRADING.** There will be one in-class midterm on 4/28 and one final (date TBD). The midterms and the final will each count for 35% of the grade. There will also be weekly homework, which will be graded and count for 30% of the grade. Each week one or two problems will be chosen at random for grading. To receive a passing grade, students must hand in all their homework and obtain at least 10% of the grade in the midterm and in the final.
- **COURSE OUTLINE.**
 1. Introduction to strategic uncertainty: perfect-information games and backward induction. Osborne: Chapter 5.
Applications: Stackelberg duopoly, “buying votes,” and races.
 2. Normal-form games. The Domination Theorem. Rationalizability and iterated deletion of dominated strategies. Osborne: Chapter 12.
 3. Nash equilibrium. Existence and justification of Nash. Bayesian Nash Equilibrium.

Applications: Auctions, war of attrition, electoral competition, the Kitty Genovese game, and voting in juries.

Osborne: Chapter 2,3 and 4. For Bayesian Nash Equilibrium, Chapter 9.

4. Zero-sum games. Minmax theorem. Osborne: Chapter 11.
5. Extensive-form games. Subgame-perfect Nash equilibrium. Repeated games, and Folk Theorems.
Applications: Oligopoly, inflation.
Osborne: Chapter 7, 14 and 15.
6. Signaling games. Perfect Bayesian equilibrium. Domination and equilibrium-domination refinements.
Applications: Spence's job-market signaling model. Strategic information transmission (cheap talk). Open and closed legislative rules.
Osborne: Chapter 11.
7. Other topics. Common knowledge. Agreeing to disagree and no trade.