

**Economics 160: Game Theory**  
**Spring 2013**

**Professor Matthew O. Jackson**

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**Textbooks.** The text for the course is:

*Games, Strategies, and Decision Making*, Joseph E. Harrington, Jr., Worth Publishing.

Another text is available if you wish additional reading:

*Game Theory: An Introduction*, Steve Tadelis, Princeton University Press.

Harrington's text is at a more introductory level than the Tadelis text (despite the titles), as the Tadelis text provides a more formal presentation with fewer applications. These complement each other.

In addition, I have a set of introductory notes: "A Brief Introduction to the Basics of Game Theory," and there is a short text: *Essentials of Game Theory*, by Kevin Leyton-Brown and Yoav Shoham; Morgan and Claypool Publishers, 2008. For a more advanced look at some topics, *A Course In Game Theory* by Martin Osborne and Ariel Rubinstein, is available for free download.

**Online Materials.**

The course will be partly "flipped": Each week there will be videos (about 1.5 hours/week) that cover background material - based on a MOOC I have been teaching with Kevin Leyton-Brown of UBC and Yoav Shoham from Stanford. You should watch these before coming to class, as that will allow us to discuss more interesting examples of games and to do some in-class exercises. The class material is still essential to the course, as the videos cover basic definitions, but then we will dig more deeply into the concepts and various applications in class.

**Assignments and Exams.** The course will have five problem sets, a midterm, and a final exam. Each problem set covers a significant amount of material, and so leaving it until the night before it is due is not a good idea. Late problem sets are not accepted without prior permission *and a valid reason* (being busy does not count). Consulting with other students on

problem sets is permitted, but every student must write up his or her own solutions.

In addition to the problem sets and exams, we will play an number of games in-class a new platform.

For all assignments, the Stanford Honor Code applies.

**Grade.** The final grade in this course will break down as follows: problem sets plus in-class game participation (30%), midterm (30%), and final exam (40%).

### Syllabus

H6 refers to Harrington, Chapter 6, and T5 refers to Tadelis chapter 5, V1 indicates Videos unit 1.

- April 1 - Lecture 1: *Rationality and Games, the Normal Form, Nash Equilibrium, H1, H4, T3, V1*
- April 3 - Lecture 2: *Nash Equilibrium Continued H4, H5, H6, T5, V1*
- April 8 - Lecture 3: *Mixed Strategies, Existence of equilibrium, Blotto Games, H7, T6, V2*
- April 10 - Lecture 4: *Dominance and Iterative Dominance, H2, H3, T4, V3*
- April 11 - **Problem Set 1 Due - 4pm**
- April 15 - Lecture 5: *Extensive Form Games and Backward Induction H8, T7, V4*
- April 17 - Lecture 6: *Subgame Perfection, Bounded Reasoning and Extensive Form Games, H8, H9, T8, V4*
- April 18 - **Problem Set 2 Due - 4pm,**
- April 22 - Lecture 7: *Repeated Games and Folk Theorems H13, T10, V5*
- April 24 - Lecture 8: *Repeated Games, Learning, H14, T10, V5*

- April 25 - **Problem Set 3 Due - 4pm,**
- April 29 - Lecture 9: *Bayesian Equilibrium, Auctions and Games of Incomplete Information H10, T12, V7*
- May 1 - Lecture 10: *Bayesian Equilibrium Continued, Auctions H11, T13, V7*
- May 6 - Lecture 11: **Midterm Exam**
- May 8 - Lecture 12: *Cooperative Games, Definitions, Shapley Value, V6*
- May 13 - Lecture 13: *Cooperative Games, Core, Applications, V6*
- May 15 - Lecture 14: *Social Choice Theory, V8*
- May 16 - **Problem Set 4 Due - 4pm,**
- May 20 - Lecture 15: *Social Choice Theory, V8*
- May 22 - Lecture 16: *Incomplete Information in the Extensive Form, H11, T15*
- May 29 - Lecture 17: *Incomplete Information in the Extensive Form: Signaling, Mixing, Bluffing, Herding, H11, H12, T16-17*
- May 30 - **Problem Set 5 Due - 4pm,**
- June 3 - Lecture 18: *Games with Matching, Variable Populations, Evolution and Dynamics H16, H17*
- June 5 - Lecture 19: *Review Session*
- June 12, 8:30am **Final Exam**