

Econ 201c: Game Theory with Asymmetric Information and Applications

Professor: Simon Board

Email: sboard@econ.ucla.edu

Class: Mon, Wed 9:30-10:45, Bunche 3178

Office hours: Mon, Wed 2:00-3:00, Bunche 9353

TA: Aristotle Magganas

Email: aristotlem25@g.ucla.edu

Section: Fri 9:00-10:50, Dodd 121

Office hours: Tue, Th, 3:30pm-4:30pm in the Alper Room

Overview

This class will introduce students to the problems of moral hazard and asymmetric information. We show how these forces can undermine the efficiency of markets, and discuss how contracting can help address these problems. This class focuses on developing common tools, and draws applications from labor economics, industrial organization and public economics.

Assignments

There are two types of homework, a midterm and a Final.

1. Homework Problems (3 problem sets, 15% total). These problems are typically longer, and are chosen to introduce students to new applications and new techniques. Students can work together on these problems. However, each student must hand in their own version of their solutions. Using previous years solutions counts as “unauthorized material” and is considered a violation of the student code of conduct.
 - Homework is due at 11:59pm on Thursday night.
 - Solutions will be provided in the next day’s section, so late submissions will not be allowed.
2. Diagnostic Problem Sets (2 problem sets, 10% total). These must be completed individually. They are of the difficulty of final exam questions and are designed to give students and the instructors an accurate understanding of the class’s level of understanding. Students should take this under approximate exam

conditions: You should give yourself 3-4 hours (albeit open book) and should not consult with other students or previous years solutions.

- If you turn in the problem set, you get full points no matter how many questions you get correct.
- Diagnostic problems are due at 11:59pm on Thursday night.

3. Midterm (25%)

- This will take place on Fri May 12th, 9:00-10:50am in the TA Section.
- You can bring in notes: Up to 6 sides on letter-sized paper, any font.
- These questions will be on moral hazard (but not dynamic contracts).

4. Final (50%)

- This will take place on Monday June 12th, 11:30am-2:30pm. Location TBA.
- You can bring in notes: Up to 12 sides on letter-sized paper, in any font.
- This will cover material from the entire course (but not market design).

Important dates:

- Thu Apr 27 (Week 4): HW1
- Thu May 4 (Week 5): Diagnostic 1
- Fri May 12 (Week 6) Midterm, 9:00-10:50am.
- Thu May 18 (Week 7): HW2
- Mon May 29 (Week 9): Memorial Day – No class
- Thu June 1 (Week 9): Diagnostic 2
- Thu June 8 (Week 10): HW3
- Mon June 12 (Week 11): Final, 11:30am-2:30pm.

Textbooks

[MWG] *Microeconomic Theory*, Mas-Colell, Whinston and Green, OUP.

[ST] *Lectures in Contract Theory*, Segal and Tadelis, Online notes.

http://faculty.haas.berkeley.edu/stadelis/econ_206_notes_2006.pdf

[BD] *Contract Theory*, Bolton and Dewatripont, MIT

A Course in Game Theory, Osborne and Rubinstein, MIT

<https://www.economics.utoronto.ca/osborne/cgt/index.html>

Game Theory, Fudenberg and Tirole, MIT

Topics

1. Introduction: Market failures [1 lecture]

- Externalities (MWG, ch. 11)
- Market power

2. Moral Hazard [5 lectures]

- Moral hazard problem (MWG, ch. 14; ST ch. 5; BD ch. 4)
 - When is first best achievable?
 - Discrete actions
 - Continuous actions
- Applications: (ST ch. 5; BD ch. 4, 8)
 - Debt contracts (Innes, 1990)
 - Multi-tasking (Holmstrom and Milgrom, 1991)
 - Tournaments (Lazear and Rosen, 1982)
 - Teamwork and Free-riding (Holmstrom, 1982)

3. Dynamic Contracts [4 lectures]

- Risk-sharing contracts (Thomas and Worrall, RES, 1988)
- Relational contracts (Levin, AER, 2003)
- Back-loading (Thomas and Worrall, RES, 1994)

4. Asymmetric Information [7 lectures]

- Revelation principle, taxation principle (MWG Ch. 23)
- Single agent: Nonlinear pricing (MWG Ch. 23)
 - Discrete types, Continuous types
 - Applications: Taxation, Procurement, Common Values
- Multiple agents (MWG Ch. 23)
 - Auctions (revenue equivalence, optimal auctions)
 - Public goods (VCG mechanism, Pivot mechanism)
 - Trade (Myerson-Satterthwaite)
- Dynamics
 - Sequential screening (Courty and Li, RES, 2000)
 - Coase conjecture (Sutton RES, 1986)
- Competition: Private Values
 - Competition and nonlinear pricing, competing auctioneers
- Competition: Common Values (MWG Ch. 13)
 - Akerlof

- Rothschild-Stiglitz

5. Market design [2 lectures]

- One-sided allocation
 - Serial dictatorship, probabilistic serial, Hylland-Zeckhauser
- One-sided allocation with endowments
 - Top trading cycles
- Two-sided matching
 - Gale-Shapley, Boston mechanism