

Summer 2007  
Game Theory  
440.644.51

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I have indicated Rasmussen (2007) as the required text. I will supplement the presentation in that book with class notes. I will, for example, present a much more general treatment of problems of asymmetric information encountered in specific contexts such as auction design or price discrimination. Some of the supplementary material will parallel the presentation in Laffont and Martimort (2002) on problems of “adverse selection,” although I expect you would find the class notes more than sufficient.

The first few class meetings will be about big ideas. After that we will settle into the basic material one would have been expected to encounter in a course on game theory, but the point of the course is to keep an eye on the big ideas and to avoid getting caught up on the parochial aspects of theory. Indeed, after going through much of the basic game theory, we will move on to a bigger theme of “design economics.” “Design economics” pertains to the design of contracts and institutions.

We will have 14 class meetings over the course of eight weeks. The first class meeting is, of course, Wednesday, June 27. The last meeting will be Wednesday, August 22. We will not meet on Wednesday July 4, and the week of July 15 – 21 will also be free.

Each Monday I will assign a problem set that will be due the following week. I will also assign a problem set this first Wednesday. That makes for seven problem sets in all, and I will grade each of them. I will apply the four best grades of the *first six* problem sets to 80% of your grade for the entire course. Each of those four best problem sets will count for 20% of your grade for the course. The seventh and final problem set will account for the remaining 20% of your grade for the course.

Required book:

**Games and Information, 4<sup>th</sup> edition**  
Eric Rasmussen  
Blackwell Publishing, 2007

Other reference:

**The Theory of Incentives**  
Jean-Jacques Laffont and David Martimort  
Princeton University Press, 2002

- 0 Some broad statements about games and game theory and about what you should get from the course.
- (a) Game theory: a theory of strategic interdependence. Contrast to decision theory.
  - (b) Thinking “strategically” – that is, getting over your prejudices (if any) about how strategic situations unfold or how they should unfold.
  - (c) Not taking the theory too seriously. Theory may help set up the right questions and issues, but it doesn’t always have the best answers.
  - (d) Thinking about “design economics.”

Some tractable examples of games and some design problems:

- (a) Problems of asymmetric information
  - (i) Auction design
  - (ii) The design of airline fares or health insurance contracts
- (b) Problems of moral hazard: Regulating fisheries
  - (i) by centralized processes
  - (ii) by decentralized processes

The design of contracts more generally

- (a) The design of electricity marketing contracts
- (b) The design of agency contracts
- (c) The design of political institutions (Constitutions as contracts)

Spatial Competition

- (a) A strategy for locating Starbucks sites
- (b) Political competition

## I Games in Strategic Form/Normal Form

- (a) Dominated Strategies 19
- (b) Nash Equilibrium 26
- (c) Existence of Nash Equilibria 95

## II Some Experimental Evidence about Games and Markets

III	Games in Extensive Form	
	(a) Backward Induction and Subgame Perfection	108
	(b) Forward Induction	173
IV	Static Games of Incomplete Information	
	Bayesian Equilibrium	56
	The Revelation Principle	276-284
	A single-unit, private-values auction	385-394
V	Dynamic Games of Incomplete Information	
	Perfect Bayesian Equilibrium	156-160
	Signaling Games	320-330
VI	Design Economics	
	Problems of Moral Hazard: The Basic Principal-Agent model	181-192
	The Revelation Principle and Problems of Adverse Selection	
	A single-unit, private-values auction again	
	Price discrimination: The quality-discriminating monopolist	296-304