Teoría de Juegos y Economía de la Información   Profesor: Juan Escobar

Spring 2019

This is an advanced course on auctions, mechanism design, and pricing strategies. We will cover several results on the design of trading institutions to maximize welfare and/or efficiency. The course covers classical results on the design of simple trading environments, to recent research on multinuit auctions and combinatorial assignment problems. The course also covers applications to the design of real world markets for internet trading, dynamic price discrimination, electricity, telecomunication spectrum, fishing rights, etc.

The course is intended to advanced students with interests in economics and related fields (finance, operations research, marketing, etc). The course assumes students have some background in game theory, probability theory, and optimization. If you are not familiar with concepts such as Nash equilibrium or Bayesian equilibrium, you should first take some introductory game theory courses.

We will assign 3 homeworks. I expect you to write your homeworks on your own, but discussion of problem sets and material covered in lectures is encouraged. Students are also expected to give a presentation on some recent research paper.

The final grade will be computed as

$$F = 40\%HG + 40\% \text{ presentation } + 20\%\text{participation in class.}$$

The following textbooks are recommended.

1. Fudenberg and Tirole, Game Theory, 1991

2. Mas Colell, Whinston, and Green, Microeconomic Theory, 1995

3. Putting Auction Theory to Work, Paul Milgrom 2004

The following is the list of some of the topics covered

1. Auctions and mechanism design (2 weeks)

   - The VCG mechanism
   - The mechanism design problem and the revelation principle
   - Revenue equivalence theorem (Myerson 1981)
   - Optimal auctions and the monopoly problem (Bulow 1989)
   - Common value auctions, affiliation, the linkage principle (Milgrom and Weber 1982)
   - Auction Design (Milgrom 2004)
   - Examples: efficient bargaining (Myerson and Satterthwaite 1983), optimal regulation (Baron and Myerson 1982), auctions versus negotiations (Bulow and Klemperer 1994), collusion with incomplete information and price rigidities (Athey, Bagwell, and Sanchirico 2004), Security Auctions

2. Commitment, bargaining, and the Coase conjecture (1 week)

   - Fudenberg and Tirole (1983), Fuchs and Skrzypacz (2010), Board and Pycia (2014)
   - Bargaining and delay: Abreu and Gul (2000)

3. Multiunit and combinatorial auctions (1 week)

   - Milgrom (2004), Ausubel, Cramton, Pycia, Rostek, and Weretka (2014)

4. Dynamic mechanism design and pricing (1 week)

   - Pavan, Segal, and Toikka (2014), Board and Skrzypacz (2016), Garrett (2016)

References

ABREU, D., AND F. GUL (2000): "Bargaining and Reputation," *Econometrica*, 68(1), 85–117.

ATHEY, S., K. BAGWELL, AND C. SANCHIRICO (2004): "Collusion and price rigidity," *Review of Economic Studies*, 71(2), 317–349.

AUSUBEL, L., P. CRAMTON, M. PYCIA, M. ROSTEK, AND M. WERETKA (2014): "Demand Reduction and Inefficiency in Multi-unit Auctions," *The Review of Economic Studies*, 81(4), 1366–1400.

BARON, D. P., AND R. B. MYERSON (1982): "Regulating a Monopolist with Private Information," *Econometrica*, 50(4), 911–930.

BOARD, S., AND M. PYCIA (2014): "Outside Options and the Failure of the Coase Conjecture," *The American Economic Review*, 104(2), 656–671.

BOARD, S., AND A. SKRZYPACZ (2016): "Revenue Management with Forward-Looking Buyers," *Journal of Political Economy*, 124(4), 1046–1087.

BULOW, J., AND P. KLEMPERER (1994): "Auctions Versus Negotiations," *American Economic Review*.

BULOW, J.AND ROBERTS, J. (1989): "The Simple Economics of Optimal Auctions," *The Journal of Political Economy*, pp. 1060–1090.

FUCHS, W., AND A. SKRZYPACZ (2010): "Bargaining with Arrival of New Traders," *The American Economic Review*, 100(3), 802–836.

FUDENBERG, D., AND J. TIROLE (1983): "Sequential Bargaining with Incomplete Information," *Review of Economic Studies*, 50(2), 221–247.

GARRETT, D. (2016): "Intertemporal Price Discrimination: Dynamic Arrivals and Changing Values," *The American Economic Review*, 106(11), 3275–3299.

MILGROM, P. (2004): *Putting Auction Theory to Work*. Cambridge University Press.

MILGROM, P., AND R. WEBER (1982): "A Theory of Auctions and Competitive Bidding," *Econometrica*, pp. 1089–1122.

MYERSON, R. B. (1981): "Optimal Auction Design," *Mathematics of Operation Research*, 6(1), 58–73.

MYERSON, R. B., AND M. A. SATTERTHWAITE (1983): "Efficient Mechanisms for Bilateral Trading," *Journal of Economic Theory*, 29(2), 265–281.

PAVAN, A., I. SEGAL, AND J. TOIKKA (2014): "Dynamic Mechanism Design: A Myersonian Approach," *Econometrica*, 82(2), 601–653.