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. Auction: Theory and Practice, Paul Klemperer 2003
2. Putting Auction Theory to Work, Paul Milgrom 2004

The following is the list of some of the topics covered

1. Auctions and mechanism design (2-3 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)
    - Correlated types (Cremer and McLean 1988)
    - Auction design (Milgrom 2004)
    - Robustness and variations: Discrimination (Deb and Pai 2017), approximation (Hartline 2012), general information structure (Bergemann, Brooks, and Morris 2017), auctions with resale (Zhoucheng 2002, Carroll and Segal 2018)
    - Examples and applications: 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 (DeMarzo, Kremer, and Skrzypacz 2005), generalized war of attrition (Bulow and Klemperer 1999), auctions with externalities (Jehiel, Moldovanu, and Stacchetti 1996), internet auctions (Edelman, Ostrovsky, and Schwarz 2007)
2. Commitment, bargaining, and the Coase conjecture (1 week)
    - Fudenberg and Tirole (1983), Fuchs and Skrzypacz (2010), Board and Pycia (2014)
    - Bargaining and commitment types: Abreu and Gul (2000)

- Bargaining and non-common priors: Yildiz (2003)
- Auctions with limited commitment: Skreta (2015), Liu, Mierendorff, Shi, and Zhong (2019), Doval and Skreta (2018)

3. Multiunit and combinatorial auctions (1 week)
    - Milgrom (2004), Ausubel and Milgrom (2006), Ausubel, Cramton, Pycia, Rostek, and Weretka (2014), Cramton (2013), Milgrom and Segal (2019)
4. Dynamic mechanism design and pricing (1 week)
    - Pavan, Segal, and Toikka (2014), Board and Skrzypacz (2016), Garrett (2016), Hörner and Samuelson (2011), Stokey (1979)

References

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