

15C023

Digital Market Design

3 ECTS

Overview and Objectives

The course introduces the main results of the economic literature how to design markets in order to match buyers and sellers. Big chunk of the course is devoted to auctions, where a single seller uses bids to determine who gets what and at what price. During the course we will develop analytical framework for analyzing auction markets, which we then apply to a number of real-life markets such as internet ads, eBay auctions etc. We will also study more general allocation mechanisms such as the VCG, and situations where allocations have to be made without money (organ donors, school assignment, etc.) The course is designed for graduate students in economics interested in understanding the design and functioning of markets, particularly auctions and matching markets.

Course Outline

The course is divided in two parts, and will cover the following topics.

1. Theory foundations

- Auction mechanisms and bidding strategies
- “Revenue Equivalence Theorem”
- Optimal auction
- The effects of risk aversion and asymmetry among bidders
- Preventing collusion and encouraging entry
- Common-value auctions and the winner’s curse
- Multi-object auctions
- Optimal matching
- Deferred Acceptance algorithm
- Two-sided markets.

2. Applications:

- Mobile-phone licenses and spectrum auctions
- Central bank liquidity and other divisible goods auctions
- “Position auctions” for internet advertising
- Auction platforms
- School assignments

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Required Activities

Attendance is required for this course.

Evaluation

Course evaluation will consist of two parts – problem sets and end of term presentation. There will be two problem sets, where each counts for 20% of the final grade (40% in total). Individual presentation about a suggested topic will count for 60% of the final grade.

Materials

Krishna, V. (2002), *"Auction Theory."* Academic Press.

Klemperer, P. (2004), *"Auctions: Theory and Practice."* Princeton University Press.

Milgrom, P. R. (2004). *"Putting Auction Theory to Work."* Cambridge University Press.

Varian, H. R. (2007). *"Position Auctions"*. International Journal of Industrial Organization, 25(6), 1163-1178.

Roth, A., and Sotomayor, M. (1992). *"Two-Sided Matching: A Study in Game-Theoretic Modeling and Analysis"* (No. 18). Cambridge University Press.