

Syllabus

Lecture on Market Design

Number of ECTS: 4

Number of hours: 24

Teacher:

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Brief Course Description

This course introduces the fundamentals of market design. It intends to study how to allocate scarce resources both via price mechanisms (e.g., market for mobile radio frequencies) and via non-price allocation procedures (e.g., allocation of kidneys), and how to create successful markets. Market design aims to design real-world markets, with desirable goals such as allocative efficiency and stability, and knows great success stories in the last decades. The first half of the class focus on auction theory with applications to online auctions, keywords and spectrum auctions. The second half investigates matching markets with applications to school choice and organ exchange.

Learning Outcomes

To start research projects on market design using the new theoretical knowledge provided in class: theoretical and/or applied investigations which affect many of today's relevant economic policy fields and very diverse markets. Examples are diverse: structuring broadband expansion; electricity markets (for electricity from renewable energies); markets for CO2 certificates or other emission rights; auctioning of government bonds; auctioning of *toxic* securities after the financial crisis; the markets for patents; rules for public procurement; design of reputation systems on digital platforms, allocation of schoolchildren and students to childcare centers, schools and universities; regional distribution of refugees.

Indicative Contents

Chapter 1 Introduction to market design

Part I Auction design

- Chapter 2 Single-unit auctions
- Chapter 3 Case study: Online auctions
- Chapter 4 Common values
- Chapter 5 Multi-unit auctions
- Chapter 6 Case study: Keywords auctions
- Chapter 7 Case study: Spectrum auctions

Part II Matching markets

- Chapter 8 Matching models
- Chapter 9 School choice
- Chapter 10 Kidney exchange

Measurement of learning outcomes / Assessment

The evaluation will be based on a referee report for an academic paper and a final test.

Required/Essential Readings

M. Bichler (2017), *Market Design (A Linear Programming Approach to Auctions and Matching)*, Cambridge University Press.

G. Haeringer (2019), *Market Design: Auctions and Matching*, MIT Press.

V. Krishna (2009), *Auction Theory*, 2nd edition, Academic Press.

Roth, A., & Sotomayor, M. (1990). *Two-Sided Matching: A Study in Game-Theoretic Modeling and Analysis (Econometric Society Monographs)*, Cambridge University Press.

Recommended/Supplementary Readings

A reading list will be sent for each lecture.