Objectives

This course gives an introduction to the theory of mechanism and market design and some of its key-applications. The main theoretical building blocks are the theory of social choice, incentives, implementation, and matching that will be addressed throughout the first week of the course. The theoretical insights will be applied to the design of (entry-level) labor markets, exchange platforms for student housing or organ-transplants, and the allocation of infrastructure throughout the second week of the course.

Evaluation

Take-home exam  Throughout the first week of the course, students will receive little problem sets that have to be submitted before the beginning of the second week of the course and are subject to grading.

Research paper  After the course, students have to prepare a short paper (6 to 10 pages) of a market or mechanism design problem of their own choice. The paper can apply the insights of the course to another area of market design, discuss the extension of a theoretical result, or discuss a related research direction which has not been covered in class (for inspiration, see the webpage of Al Roth at Harvard - in particular the material of his course on market design and the “market design blog” will prove useful). The paper can either be an original piece of research or mainly a well-structured review of one or more paper(s) by other researcher(s). A topic related to the students PhD project is certainly welcome. The paper should be typed (handwriting is not accepted). Joined work of up to two students is encouraged, but in that case the paper should be 10-14 pages (and the grade will not discriminate between the two students). The final grade will be one third the grade of the take-home exam and two thirds the grade for the research paper.

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Core texts

Key elements of social choice and mechanism design are covered in ch. 21 and 23 of

Mas-Colell et al. (MWG), Microeconomic Theory, Oxford University Press, 1995.

However, you may prefer to read Reny (2001) and Krishna and Perry (1998) instead. A
comprehensive reference for the basics on two-sided matching is


The more recent literature on normative allocation design is reviewed in


A detailed introduction to the theory of (package) auctions and the application to spectrum market design is given by


Supplementary Reading


Roth, Alvin E. (2008a), What have we learned from market design? Hahn Lecture, Economic Journal, 118, 285-310.


Schedule

Week 1: Theory

- Session 1: 11-01-2011, 17:00-18:45: Opening and introductory examples
  
  Roth (2002), Roth (2008a), MWG (1995, ch. 21)

- Session 2: 12-01-2011, 17:00-18:45: Elements of social choice (Arrow impossibility, Gibbard-Satterthwaite theorem)
  

- Session 3: 13-01-2011, 15:00-19:00: Optimal mechanism design (implementation, revelation principle, revenue equivalence theorem)
  

- Session 4: 14-01-2011, 15:00-19:00: Two-sided matching (stability, manipulability, and fairness)
  
  RS (1990, ch. 2-4), Gale and Shapley (1962)

Week 2: Applications

- Session 5: 31-01-2011, 13:00-16:00: Entry-level labor markets
  
  Roth (1984), Roth and Peranson (1999)

- Session 6: 01-02-2011, 17:00-18:45: Student Housing
  

- Session 7: 02-02-2011, 17:00-18:45: Kidney exchange
  

- Session 8: 03-02-2011, 15:00-19:00: School choice and student placement
  

- Session 9: 04-02-2011, 8:00-10:45: Matching with contracts and package auctions
  

1All sessions are in Seminarraum 4 (SOWI), IBK