Economics 2099 – Market Design

Scott Duke Kominers

Logistics

Time. Tuesdays, 16:00–18:45±ε (beginning September 8, 2015).

Location. Littauer M-16.

Office Hours.
- By appointment – Please email kominers@fas.harvard.edu to schedule, using the subject line “2099 Office Hours.”
- Over dinner – After class each week (if there is interest), there will be an optional, informal “design dinner” in Harvard Square. (Restaurants will be selected via social choice mechanism.)
- At the climbing gym – Most Sunday evenings, I will be climbing at Brooklyn Boulders Somerville (12A Tyler Street); please feel free to drop by. (To confirm in advance, please e-mail kominers@fas.harvard.edu, using the subject line “2099 Climbing.”)

Course Webpage.

Teaching Assistant.
- Ben Roth (benroth@mit.edu).

Overview

Description. This course explores the theory and practice of market design. Key topics include auctions, labor market matching, school choice programs, online markets, organ exchange systems, financial market design, and matching with contracts. The first half of the course will introduce market design and its technology; subsequent weeks will discuss recent papers alongside their classical antecedents.

Quasi-Prerequisites. Courses in microeconomics (Economics 1011a and/or 2010a,b), game theory (Economics 1052, 2052 and/or 2087hf), and/or normative economics (Economics 2070) will provide useful context and technical background. Some understanding of algorithms, complexity, and/or combinatorics (e.g., Computer Science 124, 186, 284 and/or 286r) will at times be useful. However, I do not believe in formal prerequisites — these observations are made only for the purpose of guidance.

If you are interested in taking the course and are concerned about the difficulty of the material, please get in touch with me early in (or before) the fall semester. I am inclined to reward individuals for taking risks and stretching themselves.

Requirements. Evaluation will be primarily based upon class participation and discussion. Additionally, each student will prepare a written “research proposal” detailing a novel problem in market design and an approach to a solution. A short abstract of the proposal will be due on October 6, 2015, and a short summary will be due on November 10, 2015. The final proposal will be due on December 10, 2015 (the last day of Reading Period).
How to Read this Syllabus. “Background” readings will be taught in class. Readings listed as “For Class Discussion” will be discussed intensively, and thus should be read in advance. “Further Reading” references may be touched upon in class sessions, but are mostly provided as suggestions for students who wish to explore in more depth.

Topics

Introduction/Overview – September 8, 2015.

For Class Discussion.


Background.


Further Reading.


For Class Discussion.


Background.


Further Reading.


School Choice – September 22, 2015. (Featuring Nikhil Agarwal & Parag Pathak.)

For Class Discussion.


Background.


Further Reading.


Background.


Further Reading.


**Signaling in Matching Markets – October 6, 2015.**

*For Class Discussion.*


**Background.**


**Further Reading.**


**Auction Theory – October 13, 2015.**

*For Class Discussion.*


Background.


Further Reading.


Internet Markets – October 20, 2015.

(Featuring Ben Edelman & Andrey Fradkin.)

For Class Discussion.


Background.


**Further Reading.**


**Auctions in Practice – October 27, 2015.** *(Featuring Jeff Siegel.)*

*For Class Discussion.*


*Background.*


FCC Staff. The broadcast television spectrum incentive auction: Innovation in policy to ignite innovation for consumers and business, 2013.


Further Reading.


**Organ Allocation – November 3, 2015.**

*For Class Discussion.*


**Background.**


**Further Reading.**


**Dynamic Allocation – November 10, 2015.**

(Featuring Neil Thakral & Utku Ünver.)

*For Class Discussion.*


*Background.*


*Further Reading.*


**Markets for Intellectual Property – November 17, 2015.**

*For Class Discussion.*


*Background.*


Further Reading.


**New Horizons – November 24, 2015.**

(Featuring Helen Jack, Mike Luca, David Parkes, Ben Roth, & Ran Shorrer.)


Student Talks/Course Wrap – December 1, 2015.

General References

Matching.

Auctions.

Market Design.

Related Areas

Search/Decentralized Matching.

Algorithmic Game Theory.

Miscellany

Interesting Properties of the Course Number.
- The course number is a “safe prime” – that is, 2099 is prime and \((2099 - 1)/2 = 1049\) is also prime.
- The binary representation of the course number \((100000110011)\) is also the decimal representation of a prime.
- The course number is the smallest prime that is the sum of 29 consecutive primes \((2099 = 13 + 17 + \cdots + 139)\).
- The course number is in the four-step Fibonacci sequence starting with 0, 1, 1, and 1.
- Assuming no changes in our calendar system, the year 2099 will have exactly three “Fridays the Thirteenth.” (So does 2015!)

QED