



Market Design

EC 131

Instructor Info



Laura Doval



By appointment



BAX 215



<http://www.laura-doval.com>



ldoval@caltech.edu

Course Info



Prereq: EC 11 EC 121 EC 172



Mo, Wed, & Fr



9-10 am



TBD

Overview

The class studies different mechanisms to allocate a scarce resource, frequently called markets, using theoretical models. We will cover centralized markets, which clear via a single price, waiting or rationing, or use centralized algorithms to allocate demand and supply; decentralized markets, which clear via search; and auction markets. In each case, we will study how market rules determine the incentives of market participant and how to design these markets, focusing on efficiency and revenue maximization. Applications to electricity markets, concert tickets, ride-sharing, labor markets, school choice, dating markets, sponsored search ad auctions, and spectrum auctions will be covered.

Grading Scheme

30%	Weekly reports
70%	Final Project/Presentation

Weekly reports

Starting October 7, each student must submit a written report explaining the main concepts covered in lecture in the previous week. I will also suggest news articles and podcasts that go with the material of a given week. When I do, I expect that they are also covered in the report.

Reports are due each Monday at the beginning of class. Reports are limited to a maximum of two pages

The ability to write and hand in the weekly report is highly correlated with class attendance. You are allowed to miss at most three classes without justification.

Final Project and Presentation

The final project consists of identifying and studying the phenomena of a particular market (or identify the potential for creating a market) through the lens of the material covered in class.

The final project consists of an in-class presentation, followed by a 5000 word paper.

- See me about potential topics in the first two/three weeks of class.
- Title is "The Market for XXX". Examples: cryptocurrency, ride-hailing, kidneys, data, privacy.
- Phenomena of interest includes: a friction that prevents the creation of the market, a friction that would be solved by the creation of the market, an existing failure within the market, suggesting an improvement to the market design.
- The paper can also be about modeling an existing market and using the model to explain a particular feature of how the market works.

Late assignments will not be accepted, unless approved by the Dean of Studies.

Important Dates

- November 20: last day for adding/dropping classes
- Friday, November 29: no classes (Thanksgiving)
- Wednesday, December 4 and Friday, December 6: in-class presentations
- Friday, December 6: Final project due.

Final Presentation Guidelines

1. Each presentation will be 8 minutes long. With time for questions, the total presentation time will be 10 minutes for each student.
2. Email me your presentation slides on or before Tuesday, December 3.

Reading Material

There is no textbook for the class. However, I expect you to have access to the book below:

Required Texts

Roth, Alvin. *Who gets what and why?*. Houghton Mifflin Harcourt. 2015.

Before the first lecture, you need to read:

Required Reading

Borges, Jorge Luis. *Funes the Memorious*, in *Ficciones*, Grove Press. 1962.

Suggested Readings

- Tirole, Jean. *Economics for the common good*. Princeton University Press. 2017
- Glaeser, Edward. *A review essay on Alvin Roth's "Who gets what and why?"* Journal of Economic Literature. 2018
- Kominers, Scott, Teytelboym, A., and Crawford, V., *An Invitation to Market Design*. Oxford Review of Economic Policy, 2018, 33.4

Other

I will suggest newspaper articles, blog posts, and podcasts as the class progresses.

Class Schedule

MODULE 1: Building Blocks

Week 1	Welfare Economics	The Pickle Problem, Planet Money # 665 Prendergast, Canice. <i>How Food Banks Use Markets to Feed the Poor</i> , Journal of Economic Perspectives. Volume 31, Number 4, Fall 2017, Pages 145-162
	Efficiency	
Week 2	Incentives and Game Theory	The Division Problem, Planet Money #890 The Pay What you Want Experiment, Planet Money # 889
	Efficient Auctions	The Biggest Auction Ever, Planet Money

MODULE 2: A Theory of Walrasian Markets

Week 3	Vickrey Clarkes-Groves Mechanisms	
Week 4	Second Best Mechanisms	
Week 5	Markets (with prices)	The Market for Air, Planet Money
Week 6	Profit Maximizing Auctions	Auction Fever, Planet Money, #678
Week 7	Competitive Markets	

MODULE 3: Markets without Prices

Week 8	Centralized Markets without prices	Make me a match, Freakonomics Podcast Using Matching Algorithms to Find Refugees Homes with Alexander Teytelboym, Economic Frontiers How Technology could revolutionize refugee resettlement, <i>The Atlantic</i>
	School Choice Kidney Exchange	
Week 9	Decentralized markets without prices	
	Queueing	What are you waiting for?, Freakonomics Podcast #256 Queueing Lobbyists I Queueing Lobbyists II Purple Pricing @ Northwestern
	Online Platforms	
Week 10	Data Markets and Privacy	
	In - class presentations	

Acknowledgements

While there are lots of idiosyncratic choices in the set of topics and how I will introduce them, I want to acknowledge the influence that Jeffrey Ely's *Intermediate Micro* class at Northwestern and Dan Quint's *Markets and Models* class at UW Madison have had in designing this class.