

Bernard Lebrun
Office: Vari Hall 1074
Tel: 736-2100 X33653
E-mail: blebrun@econ.yorku.ca
Office hours: T-R 1:00-2:00

Fall 2011

GS/ECON 5440: AUCTION THEORY

Course Description:

The course presents the main results and methods of the theory of auctions. Using game theoretic models with incomplete information, it studies the relative performances of standard auction procedures and the design of efficient and optimal selling and buying mechanisms.

Auction theory has become a major subfield of industrial organization. One of its most famous and successful applications has been the design of auctions to allocate radio-wave spectrum to telecommunication companies. Other examples of important goods and assets that are allocated through auctions include: financial securities, such as Government debt; rights to natural resources, such as timber and oil; state enterprises to be privatized; real estate; agricultural produce and livestock; energy; and pollution permits. Government and private contracts are routinely awarded through competitive bidding, in “procurement auctions”.

The advent of e-commerce has contributed to the widespread use of auctions by the private sector. Many highly specialized markets would not exist without auction Websites such as E-Bay, Yahoo and Amazon. Search engine advertising has been very profitable for companies such as Google and Yahoo. New developments in auctions for online advertising, such as “real-time bidding,” are continually appearing. Many companies ask their suppliers to compete for contracts at online auctions, powered by specialized software that integrate with their financial and accounting systems.

Beyond auctions and procurements per-se, auction theory helps to understand topics as diverse as take-over battles, patent races, and price-setting by competing firms. Theorists in labor economics, finance, and political economy have also appealed to auction theory.

The course will first present the main auction formats and compare their performances within a simple model. In the same simple model, it will address the design of an optimal and/or efficient selling (or buying) mechanism. It will then show what the results become in more complicated models where the bidders may be budget constrained or

heterogeneous; the seller or the bidders may be risk-averse; the bidders' values for the item being auctioned or the signals they observe may be correlated; the seller may possess some private information; more than one good or more than one unit of a good may be auctioned; and the bidders may be colluding.

Lecture Schedule:

Tuesday and Thursday 10:00-11:30 in S 537 R.

Main Textbook:

Krishna, Vijay, 2010, *Auction Theory*. Academic Press.

I have placed a copy of this book at the Scott Library reserve.

Additional Books: The interested student may also consult the following books.

Klemperer, Paul, 2004, *Auctions: Theory and Practice*. Princeton University Press.

Menezes, Flavio M., and Paulo K. Monteiro, 2005, *An Introduction to Auction Theory*. Oxford University Press.

Milgrom, Paul, 2004, *Putting Auction Theory to Work*. Cambridge University Press.

Paarsch, Harry J., and Han Hong, 2006, *An Introduction to the Structural Econometrics of Auction Data*. MIT Press.

Steiglitz, Ken, 2007, *Snipers, Shills, & Sharks*. Princeton University Press.

Web Site:

I will post announcements about the course at <http://dept.econ.yorku.ca/~blebrun>

Course Outline:

Single object auctions

- Private value auctions
- The revenue equivalence principle
- Qualifications and extensions
- Mechanism design
- Auctions with interdependent values
- The revenue ranking principle
- Asymmetries and other complications
- Efficiency and the English auction
- Mechanism design with interdependent values
- Bidding rings
- Multiple object auctions
 - An introduction to multiple object auctions
 - Equilibrium and efficiency with private values
 - Some revenue considerations
 - Sequential sales
 - Nonidentical objects
 - Multiple objects and interdependent values

Grading:

There will be two examinations: one mid-term and one final. Your mark on the final examination will be your total mark for the course if it is higher than your mark on the mid-term examination. Otherwise, your mark on the mid-term examination will count for one third of your total mark and your mark on the final examination for two thirds.

The mid-term examination will be held in class time on Tuesday November 1st. The final examination will be held during the exam period (December 8th to December 22nd).