Economics 816: Topics in Applied Game Theory

**Overview.** This is an advanced course in applied game theory, with a main focus on mechanism design and auction theory. This course is intended for students who are interested in theory or who want a good theory background to do applied work. The course will cover a combination of standard results on mechanism design, auction theory, and some other research topics in applied game theory.

**Logistics.** The class meets MW 3:30-5:18 in 0291 Journalism Building. My office hours are by appointments, and my email address is lixinye@econ.ohio-state.edu.

**Textbook.** For the teaching of auction theory, I will cover materials mainly from Paul Milgrom’s auction textbook, *Putting Auction Theory to Work* (Cambridge University Press, 2004), which gives a unified and elegant treatment to auction theory.

**Grading.** Your course grade will be based on two homework assignments (50%) and one presentation (50%).

**Outline of Topics (tentative)**

1. Introduction to Market Design and Auction Theory
   
   Milgrom (2004), Ch. 1

2. Mechanism Design Basics, Vickrey Auction and VCG Mechanism
   
   Mas-Colell, A., M. Whinston, and J. Green, Microeconomic Theory, Oxford University Press, Ch. 23
   
   Milgrom (2004), Ch. 2


3. The Envelope Theorem and Payoff Equivalence

Milgrom (2004), Ch. 3


4. The Constraint Simplification Theorem and Revenue Differences

Milgrom (2004), Ch. 4


5. **Auctions with Interdependent Valuations**

Milgrom (2004), Ch. 5


6. **Auctions in Context:**

Milgrom (2004), Ch. 6


7. **Multi-Unit Auctions**

Milgrom (2004), Ch. 7, 8


8. Paper list for presentation: To be added.