• I’m Dan Quint, this is Econ 805, Micro Theory.

• Who are you? (Name, program, year)

• Office hours: Mondays 1:30-2:30, Wednesdays 9:30-10:30, otherwise by appointment

• Website: http://www.ssc.wisc.edu/~dquint/econ805/
  – Syllabus is online, with links to papers
  – I’ll post my lecture notes after each class

• No class September 30, October 9, November 27

• Grading: occasional problem sets, student presentations at end of semester
  – Point of the presentation will be to focus on one interesting paper, but also put it in context, explain how it relates to the literature, and judge whether it’s a good paper
  – I’ll circulate a list of suggestions early in the semester, but you can pick any paper you like

• Outline of the semester
  – First half will be auction theory
  – Haven’t yet decided on second half, happy to hear what you guys are interested in
  – Possibilities: matching markets; game theory models of bargaining; screening models; ?

• Readings: Milgrom book recommended for first half, but not required; papers are all available online

• Today:
  – Why study auctions?
  – Review of Bayesian games/equilibrium
Why Study Auctions?

Since we’ll be spending half the semester on auction theory, I thought I’d start by addressing the question, why study auctions? I’ll give several reasons.

- First answer is captured in the title of a working paper Paul Milgrom and others are writing: “How we saved SpectrumCo $1 Billion.”
  - SpectrumCo was a participant in the recent auction for wireless spectrum run by the Federal Communication Commission
  - Milgrom and several others worked for them as advisors, and are documenting that, following their advice, SpectrumCo paid about $1 Bn less than their competitors were paying for comparable bandwidth.
- The point: there are auctions going on in the world, and the amount of money at stake is sometimes huge
  - Christy’s and Sotheby’s art auctions – billions annually
  - Auctions for rights to natural resources (timber, oil, natural gas), government procurement, electricity markets
  - eBay: $52 Bn worth of goods traded in 2006; eBay itself had $6 Bn in revenue, current market cap around $30 Bn
  - European 3G spectrum auctions raised over $100 Bn in 2000-2001; US spectrum auctions have raised tens of billions
  - U.S. treasury holds auctions for trillions of dollars of securities annually
- And equally importantly, design matters
  - Yahoo! and Google both used auctions to place ads next to search results
  - But Google’s were better designed and raised more revenue, to the point where I believe Yahoo! now uses Google’s services to serve ads on their own search page
  - 3G spectrum auctions in UK and Germany raised over 600 euro per capita!
  - Later the same year, auction in Switzerland raised less than 20
  - Rules in the Swiss auction discouraged participation by marginal bidders and new entrants, and allowed for easy collusion among the primary competitors

So the first answer is, there’s lots of money at stake, and results can be very sensitive to auction design.
• The second reason is that auctions can be seen as a useful microcosm/laboratory for markets in general
  – As economists, one of the great mysteries we face is where do prices come from
  – We have a few silly models – Walrasian auctioneer, etc.
  – Auctions give us a setting where price formation is explicit
  – Auctions tend to generate very extensive data, lending itself to empirical work
  – And auctions lend themselves to lab experiments
  – So seeing what affects price realizations in auctions – information, asymmetries, etc – may tell us something about what happens in larger, unstructured markets

• And even if we’re not trying to explain the whole world, techniques/insights from auction theory are useful in other areas

• Paul Klemperer, in his book chapter “Why Every Economist Should Learn Some Auction Theory,” shows insights from auction theory applying to...
  – Comparison of different litigation systems
  – “All-pay” tournaments such as lobbying, political campaigns, patent races, and some oligopoly situations
  – Market frenzies and crashes
  – Online auto sales versus dealerships
  – Monopoly pricing and price discrimination
  – Rationing of output
  – Patent races
  – Value of new customers under oligopoly

• And finally, auction theory turns out to be a good way to introduce a number of useful/interesting/elegant mathematical tools, some of which will also come in handy in other areas

So that’s the basic motivation for studying auctions.

We’ll wrap up today with a quick review of some game theory, and in particular, Bayesian games, since that will be our primary tool for modeling auctions.