Universidad de San Andres

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Mechanism Design and Auctions

Tentative Outline

1. Lecture 1: Introduction, preliminaries and the independent private values model
   (a) Adverse selection
   (b) Bayesian games, infinite games
   (c) Bayesian Nash equilibrium (BNE) and Dominant-Strategy equilibrium (DSE)
   (d) Existence of equilibria in infinite games.
   (e) The Independent Private Values Model (IPVM)
   (f) The four standard auctions (plus a few more)

2. Lecture 2: Mechanism design
   (a) Formulation and definition of a mechanism.
   (b) Direct revelation mechanisms, the revelation principle.
   (c) Characterization of incentive compatibility (IC): 1-dimensional case, \(N\)-dimensional case.

3. Lecture 3: Applications of incentive compatibility
   (a) Revenue equivalence (multi-dimensional version).
   (b) Identifying equilibria in particular applications: First-Price Sealed-Bid Auction (FPA)
   (c) Reserve prices and entry fees.
   (d) Revenue maximizing mechanism: 1-dimensional case.

4. Lecture 4
   (a) Bayesian implementation: Mechanisms in terms of the expected probability of trade.
   (b) Bayesian versus dominant strategy implementation

5. Lecture 5
   (a) Efficient mechanisms: bilateral private information
   (b) Procurement


7. Additional Material (contingent)
   (a) Interdependent valuations, affiliation.
      i. English Auctions with Interdependent Valuations
      ii. Information Revelation with Interdependent Valuations
   (b) Auctions of multiple objects
      i. Demand reduction
      ii. Vickrey and Ausubel Auctions
      iii. Uniform and Discriminatory Price Auctions

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