Course:Matching, Matching, Markets and Mechanism Design

Faculty: Jordi Masó and Antonio Miralles

Term: Winter

E-mail: jordi.masso@uab.es and antonio.miralles@uab.es

Web page:

Office Hours:

Description and Objectives: This course contains the basics of market design. It is divided in two parts. The first part is related to environments with ordinal preferences, mainly two-sided matching with no indifferences on both sides. The second part is devoted to environments where cardinal preferences are relevant: assignment problems with no or coarse priorities, auctions, etc.

Outline:

Part 1: Ordinal Preferences

1. Introduction
2. The Marriage Model
    2.1. Stability
    2.2. Structure of the Set of Stable Matching
    2.3. Strategic Incentives
3. The College Admissions Problem
4. Many-to-one and Many-to-many Models
5. The House Allocation Problem

Part 2: Cardinal Preferences

1. Random Assignment with No or Corse Priorities
    1.1. Uncertainty and Tie-Breaking Lotteries
    1.2. Properties: Efficiency, Fairness, Consistency
    1.3. Market-like Mechanisms
    1.4. Large Market Equivalences
    1.5. Extensions: Priorities, Assigning Bundles
2. Mechanism Design with and without Monetary Transfers
    2.1. The Revelation Principle
    2.2. Sandwitching: Envelope Theorems
    2.3. Applications: Optimal Auctions
    2.4. Applications: Optimal Allocation without Transfers
    2.5. Extensions: Boundedly Rational Agents, Dynamic Mechanism Design
3. Implementation (if time allows)
    3.1. Maskin's Shouting Contest
    3.2. Extensions: Dynamic Implementation

References: Specific references will be provided along the course

Text Books

Alvin E. Roth and Marilda A. Oliveira Sotomayor. *Two-sided Matching: A Study in Game-theoretic Modelling and Analysis*. Econometric Society Monograph No. 18 Cambridge University Press, 1990.

Dan Gusfield and Robert W. Irving. *The Stable Marriage Problem: Structure and Algorithms*. The MIT Press, Cambridge, 1989.

Chapters 21 and 23 in Mas-Colell A., Whinston M. and Green J. *Microeconomic Theory*, Oxford University Press, 1995, for Mechanism Design.

Chapter 10 in *A Course in Game Theory* by Martin J. Osborne and Ariel Rubinstein (MIT Press, 1994), for Implementation Theory.

Grading: Each part will be followed by an exam. Each exam will count for 50% of the final grade of the course.