

**University of Hawaii at Manoa**  
**Department of Economics**

Microeconomic Theory III  
Econ 620  
Spring 2009  
Course website:  
<http://www2.hawaii.edu/~rubenj/classes/econ620>

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by appointment

## **Course Description**

This is a research oriented course designed to cover topics in microeconomic theory not covered in core classes. It is also aimed at covering recent advances and open research areas in social choice theory, game theory, mechanism-design and network economics. Applications include the theory of contracts; incentive compatible mechanisms for provision of public goods; bargaining; auction theory and others. Theoretical and applied students (especially policy-oriented) may be benefited by studying these topics. Some topics may be added or removed based on student interests.

In addition to participating in class and reading the assigned papers (approximately two per week), there are three sets of requirements for this course. The first is to complete 3-4 problem sets. The second will be to give a short presentation on a related paper at the end of the semester. The last requirement is to write a 15-pages paper that will be due the last day of the semester. I encourage you to start looking for a topic as soon as possible. Any theoretical or applied paper is welcome as long as it is related to a subject covered in the class.

## **Required textbooks**

Microeconomic Theory by Andreu Mas-Colell, Jerry Green, Michael D. Whinston. Oxford University Press 1995. ISBN: 9780195073409

Axioms of Cooperative Decision Making by Herve Moulin, Cambridge University Press 1991. ISBN-13: 978-0-521-42458-5.

Social and Economic Networks by Matthew O. Jackson, Princeton University Press 2008. ISBN-13: 978-0-691-13440-6

## **Other useful textbooks:**

Algorithmic Game Theory, By Noam Nisan et al., Cambridge University Press, 2007 ISBN-13 978-0-521-87282-9 (available online)

Auctions: Theory and Practice by Paul Klemperer, Princeton University Press 2004. ISBN 978-0-691-11426-2.

Putting Auction Theory to Work by Paul Milgrom, Cambridge University Press, 2004. ISBN 978-0-521-53672-1.

The Theory of Industrial Organization by Jean Tirole, MIT Press, 1988. ISBN 978-0-262-20071-4.

## Assessment

Problem sets: 30%

Participation/Presentations: 40%

Paper: 30%

## Tentative topics

### 1. Mechanism design

#### A. Non-Bayesian.

Two classic impossibility results in social choice theory:

- Arrow impossibility Theorem
- Gibbard-Satterthwaite Theorem

Strategyproofness in tractable domains of preferences: characterization results

- Vickrey-Clarke-Groves mechanisms
- Voting under single-peaked preferences: generalized medians
- Public good provision: fixed cost shares mechanisms
- Excludable public good: the serial mechanism
- Private good under imc: the serial mechanism
- Cost-sharing of heterogeneous private goods: submodular or supermodular cost functions

Applications: Prior-free mechanism design

- Applications of mechanism design to Network Economics
- Characterizations: Work by Roughgarden, Tardos, Moulin and Juarez.
- Worst-case measures. Work by Papadimitriou, Roughgarden, Moulin and Juarez.

**B. Bayesian mechanism design.**

- Dominant Strategy Implementation
- Bayesian Implementation
- Revenue Equivalence for Auctions
- Optimal Auctions
- Collusion in auctions

**2. Network Economics**

- Strategic Formation of Networks
- Network Markets
- Game-Theoretic Modeling of Network Formation
- Allocation Rules, Networks, and Cooperative Games
- Prior-free network design
- Scheduling and Queuing problems.

**3. Surplus Division**

**A. Cooperative games**

- The Shapley Value
- The nucleolus
- The Core
- Applications

**B. Bargaining**

- The Nash bargaining solution
- Other solutions