

Class meets MW 9:25am-10:40am in BB 271

Professor: Camelia Bejan ([camelia@rice.edu](mailto:camelia@rice.edu))  
Office Hours: by appointment

TA: Jin Li ([jl18@rice.edu](mailto:jl18@rice.edu))  
Office Hours: M 3pm-5pm, BB 233

## Syllabus for ECON 508 – Microeconomic Theory II Camelia Bejan Rice University - Spring 2011

This course is the second term of the required sequence in microeconomic theory for graduate students in the Economics Ph.D. Program. Econ 501 built the foundations of consumer choice, producer theory, and competitive (partial) equilibrium. In the first half of this course, the focus will be on general equilibrium theory, its existence, stability and optimality properties, as well as its cooperative and non-cooperative foundations. These topics are relevant to the foundations of macroeconomics and finance.

The second half of the course is an introduction to non-cooperative game theory. We will study both simultaneous-move and dynamic games, with complete or incomplete information. Relevant equilibrium concepts will be introduced and several applications to adverse selection and signaling problems will be presented.

### **Course Materials**

*Recommended textbook:* Microeconomic Theory, by A. MasColell, M. Whinston, and J. Green, Oxford, 1995, in particular Chapters 7-9 and 15-19.

*Course website:* Our class has a web page on OWL-Space. Important information, including the syllabus, homework assignments, some lecture notes, and various announcements will be posted there.

### **Topics covered**

#### **PART I: General Equilibrium Analysis**

##### 1. Introduction to General Equilibrium

- Pure Exchange: The Edgeworth Box (MWG 15.B)
- One-Consumer, One-Producer Economy (MWG 15.C)
- General vs. Partial Equilibrium (MWG 15.E)
- GE in Production Economies (MWG 16.B)
- The Welfare Theorems (MWG 16.C-F)

- Existence of Walrasian Equilibrium (MWG 17.B-C)
2. Foundations of Equilibrium
    - The Core (MWG 18.B)
    - Core Convergence & Equal Treatment (MWG 18.B)
  3. GE under Uncertainty
    - Contingent Commodities & Arrow-Debreu Equilibrium (MWG 19.B-C)
    - Sequential Trade (MWG 19.D)
    - Asset Markets (MWG 19.E)
    - Incomplete Markets (MWG 19.F)

## **PART II: Non-cooperative Game Theory**

1. Normal form games (MWG 8.A-D)
  - Dominated strategies
  - Nash equilibrium
2. Extensive form games (MWG 7.C,D,E, 9.B)
  - Subgame perfect equilibrium
3. Bayesian games and auction theory (MWG 8.E, 9.A,C)
  - Sequential equilibrium
3. Adverse selection and signaling (13.A-C)
4. Principal-Agent Problem (14.B,C)

### **Exams and Grades**

Evaluation of your course performance will be based on problem sets, a midterm and a final exam.

Although you must submit individual answers to each problem set, I encourage you to collaborate with your classmates in deriving solutions to them. A missing solution set is converted to a zero score. The problem set with the lowest score will not be included in the computation of your final score.

The midterm will be held on February 25<sup>th</sup>, during regular class hours. The final exam will be a three-hour written exam. Both exams are closed-book.

The final numerical score will be the weighted average of the scores obtained on the homework assignments, the midterm and the final exam. The weights are defined as follows:

- 25% for homework assignments,
- 30% for the midterm if midterm score > final score; otherwise 0%,

- 45% for the final exam if midterm score > final score; otherwise 75%.

The following table will be used to convert the final numerical score on the course to letter grades. I reserve the right to lower the cutoffs but not to raise them.

Score > 95%	A+
Score $\leq$ 95% and > 85%	A
Score $\leq$ 85% and > 80%	A-
Score $\leq$ 80% and > 75%	B+
Score $\leq$ 75% and > 70%	B
Score $\leq$ 70% and > 66%	B-
Score $\leq$ 66% and > 63%	C+
Score $\leq$ 63% and > 60%	C
Score $\leq$ 60% and > 55%	C-
Score $\leq$ 55% and $\geq$ 50%	D
Score < 50%	F

### **Supplementary Course Material**

1. Debreu, G., "Theory of Value," Yale U. Press, 1959.
2. Diamond, P. and M. Rothschild, "Uncertainty in Economics: Readings and Exercises," Academic Press, 1989.
3. Fudenberg, D. and J. Tirole, "Game Theory," MIT Press, 1991
4. Hildenbrand, W., "Equilibrium analysis : variations on themes by Edgeworth and Walras," Elsevier Science Pub. Co., 1988.
5. Hildenbrand, W. "Core and Equilibria of a Large Economy," Princeton University Press, 1974
6. Kreps, D., "A Course in Microeconomic Theory," Princeton U. Press, 1990.
7. LeRoy, S. and J. Werner, "Principles of Financial Economics," Cambridge U. Press, 2001.
8. Osborne, M. and A. Rubinstein, "A course in Game Theory," MIT Press, 1994
9. Rockafellar, T. A., "Convex Analysis," Princeton U. Press, 1970.
10. Takayama, A., "Mathematical Economics," 2nd Edition, Cambridge U. Press, 1985.
11. Varian, H., "Microeconomic Analysis," (3rd edition), Norton, 1992.
12. Van Damme, E., "Stability and Perfection of Nash Equilibria," Springer; 2 edition, 2002