

ECON 601: Microeconomic Theory I (Fall 2016)

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Administrative details

Date and location: Mondays and Wednesdays, 10.00am-11.50am, KAP 319

Office hours: Wenesday, 3.00pm-4.00pm in my office at KAP330B

Teaching assistant: Seungwoo Chin, email: <chinseun@usc.edu>

Office hours and review sessions of teaching assistant: **T.B.A.**

Disability

Students requesting academic accommodations based on a disability are required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP when adequate documentation is filed. Please be sure the letter is delivered to me (or to the T.A.) as early in the semester as possible. DSP is open Monday-Friday, 8:30-5:00. The office is located at Student Union 301 (Ph: 213-740.0776).

Prerequisites

Advanced microeconomics at the master or at least undergraduate level, familiarity with the basic demand, supply and competitive equilibrium theory. Also, students must feel comfortable with mathematical notation and have a basic training in calculus, real analysis and probability theory.

Description of the course

The objective of ECON 601 and ECON 603 is to train students in the basic concepts and techniques of modern microeconomic theory. If you asked me “what are the topics in micro that every person with a PhD in Economics (or related disciplines) must eventually be familiar with?” I would answer “all the chapters in the MasColler-Whinston-Green (MWG) book”. Unfortunately, in ECON 601 and ECON 603 there is not enough time to cover everything, so we had to make some choices. This part of the course focuses on (i) Game Theory, (ii) Competition in Markets (with special applications to industrial organization), and (iii) Economics of Information (see below for a more detailed outline of the course). My advice is that if you want to be a successful researcher (in micro, macro or econometrics) you should read and assimilate by yourself the chapters of MWG not covered in this class. I know it’s tough but nobody told you that this would be an easy job.

Grading

The final grade is a weighted average of three components:

- **Weekly** take-home assignments: 30% (only $n - 1$ best out of n count).
- In-class midterm exam: 30%
- In-class final exam: 40%

Both take-home assignments and in-class exams (midterm and final) will consist of problem set questions and (from time to time) some formal proofs. In-class exams will be closed book. Take-home assignments are supposed to be increasingly hard. Students are strongly encouraged to work in groups for the take-home assignments but must turn them in individually (no exceptions). Students can discuss their answers with other students enrolled in the class. However, for the take-home assignments and for the preparation for midterm and final, it is **forbidden to seek help from or discuss the solutions with anyone who is not enrolled in this class** unless I explicitly grant permission to. By “anyone who is not enrolled in this class” I refer mostly but not exclusively to other PhD students, instructors and professors in this and other departments of this and other schools. Breaking this rule will immediately lead to an F grade. If the person with whom the student has discussed the assignment is another PhD student in the Economics program, that other student will also be subject to disciplinary measures. If you have any questions on this issue please let me know immediately; this is possibly the single most important rule in this class.

Each assignment will be distributed roughly one week prior to the due date and it will be collected at the beginning of class, that is, at 10am. In case you cannot attend class or you anticipate that you will be late, you can either send it to me by e-mail or drop it in my mailbox. Make sure you do so before 10am.

The T.A. will conduct weekly exercise classes (time and location to be announced) where assignments and other exercises are discussed. **Attending these classes is also a requirement.**

If you wish to appeal your grade on an in-class exam, you must return your exam to me along with a memo explaining why you think the grade should be changed. All exams will be re-graded in their entirety.

Deadlines

- Last day to enroll and to drop class: September 9, 2016.
- Last day to drop with a mark of W: November 11, 2016.
- In-class midterm exam: Wednesday October 12, 2016 from 9am to 12pm.
- In-class final exam: Wednesday November 30, 2016 from 9am to 12pm.

Important: if the in-class examinations fall at a time that conflicts with your observance of a holy day, make sure to contact me before September 14 to schedule an alternative date.

Web

Important information (e.g. homeworks, deadlines for assignments, reading material, etc.) will be posted on the web (URL <http://www-bcf.usc.edu/~juandc> under the link “teaching”). The most efficient way to communicate with me is by email (<juandc@usc.edu>). I very rarely check my phone messages.

Books

Required - your new best friend

Mas-Colell, A., M. Whinston and J. Green (1995), *Microeconomic Theory*, Oxford University Press [abbreviated MWG]

Highly recommended

Fudenberg, D. and J. Tirole (1991), *Game Theory*, MIT Press [abbreviated FT]

Laffont, J.J. and D. Martimort (2002), *The Theory of Incentives - The Principal-Agent Model*, Princeton University Press [abbreviated LM]

Course outline

PART I. Game Theory and Applications to Market Competition

1. Static games of complete information [MWG 7-8; FT 1-2]
Definition of a game; Normal form representation; Strongly and weakly dominated strategies; Nash Equilibrium (NE); Mixed strategy equilibrium
2. Applications of NE and introduction to market competition [MWG 11-12]
Cournot competition; Bertrand competition; Externalities; Public goods
3. Static games of incomplete information [MWG 8; FT 6]
Bayesian games; Bayesian Nash equilibrium; Trembling hand equilibrium
4. Dynamic games of complete information [MWG 9; FT 3-4]
Definition of a dynamic game; Extensive form representation; Perfect and imperfect information; Backward Induction equilibrium; Subgame Perfect equilibrium
5. Repeated games [MWG 12; FT 5]
Definition; One-deviation property; Folk theorem; application to Rubinstein bargaining
6. Applications of Subgame Perfect equilibrium and dynamic competition [MWG 12]
Stackelberg competition; Entry; Precommitment
7. Dynamic games of incomplete information [MWG 9-13; FT 8]
Perfect Bayesian equilibrium; Sequential rationality; Signaling games

PART II. Economics of Information and Mechanism Design

8. Principal-Agent with adverse selection (hidden information) [FT 7; LM 2-3]
Optimal mechanism with two types; The revelation principle; Application to regulation
9. Principal-Agent with moral hazard (hidden action) [LM 4-5; MWG 14]
Risk-neutrality and first-best; Limited liability; Application to insurance
10. Bayesian mechanisms with several agents [FT 7, MWG 23]
Feasibility of an allocation; Efficiency; Optimization and the design of auctions