



ECON 601
Microeconomic Theory I

Units: 4
Fall 2024 – Mon/Wed 2:00-3:20pm
Location: KAP 305

Instructor: Prof. Nicolas Lambert
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Course overview

This is a required course in microeconomic theory for first year economic PhD students. It provides key foundations that every economist should know. Its primary goal is to prepare you to understand the ideas that underlie the material you will learn through your careers as economists.

Prerequisites

As this is a required course for PhD students, our expectation is that you are qualified to take this course. Mathematical background is roughly at the level of an advanced course in real analysis, and linear algebra will be helpful as well. Some of you may need to pick up math as you go. If you have not seen probability, topology, etc., you will need to learn some of it. If you happen to be struggling with the math, please come see us. **Sundaram's** *A First Course in Optimization Theory* and **Simon & Blume's** *Math for Economists* jointly covers all analysis, topology, optimization theory you might need in this class.

For non-econ PhD students seeking to enroll: Any student not in our Econ PhD program can only enroll with an endorsement from a USC faculty member. This can be sent to us by email, and should explain briefly why they think you need to take the class and assert your preparedness. This is on top of a strong mathematical background and prior econ training. You should be aware that the bar is high.

Communication

All course materials; instructions, announcements, notes/handouts, corrections, discussion/feedback, exams, homeworks, answer keys, your grades... etc. will be posted on Blackboard.

Reading material

You should own *Microeconomic Theory* by Mas-Colell, Whinston and Green (Oxford University Press, 1995, ISBN 978-0195073409).

We will also refer to problems and solutions in *Modeling Strategic Behavior* by Mailath, freely available online at the url below:

<https://web.sas.upenn.edu/gmailath/books/modeling-strategic-behavior/>

Notes/handouts will supplement our coverage in class.

Course outline

The course is divided into two half-semester parts:

1. Utility, Preferences, and Choice

- Consumer Choice and classical Demand Theory
- Lagrange Maximization and Duality
- Aggregation and the Representative Consumer, Producer Theory
- Expected Utility and Decision making under Uncertainty
- Monotone Comparative Statics
- Social Choice

2. Game Theory and Market Design

- Normal form games/Rationalizability/Nash equilibrium and its refinements
- Bayesian games and Bayesian Nash equilibrium
- Extensive form/dynamic/repeated games
- Subgame perfection, Perfect Bayesian equilibrium, sequential equilibrium
- Applications to bargaining/signalling/cheap talk/reputation
- Dominant strategy implementation/Hurwicz model/Gibbard-Satterthwaite theorem
- The Revelation Principle

- The Vickrey-Clarke-Groves mechanism
- Vickrey auctions and single-item auctions

Grading

Your grade will be based on the following components:

- Class participation (15%).
- Problem sets (35%), given on a weekly basis. You may work in teams of up to 3 students, but you should hand in your own problem sets and write the names of your team partners on your copy.
- Midterm exam (25%). The midterm exam will be given in class on **Monday October the 14th** at the regular lecture time. Exam duration is 90 minutes. The midterm exam is closed books, closed laptops. The midterm exam tests students on the material covered during the first half of the semester.
- Final exam (25%). The final exam will be given during the final exam week at a time and location that will be announced in class. The exam duration is 90 minutes. The final exam is closed books, closed laptops. The final exam tests students on the material covered during the second half of the semester. It is not cumulative.

Acknowledgments

We are grateful to our predecessors and to Jeff Ely, Jon Levin, and Parag Pathak for sharing their class material. We take full responsibility for any errors.

Support Systems

Student Health Counseling Services - (213) 740-7711 – 24/7 on call engemannshc.usc.edu/counseling Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call suicidepreventionlifeline.org Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-4900 – 24/7 on call engemannshc.usc.edu/rsvp Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED) | Title IX - (213) 740-5086 equity.usc.edu, titleix.usc.edu Information about how to get help or help a survivor of harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following protected characteristics: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations.

Bias Assessment Response and Support - (213) 740-2421 studentaffairs.usc.edu/bias-assessment-response-support A venue to report incidents of bias, hate crimes, and microaggressions for appropriate investigation and response.

The Office of Student Accessibility Services - (213) 740-0776 <https://osas.usc.edu/> Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Support and Advocacy - (213) 821-4710 studentaffairs.usc.edu/ssa Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student. **Diversity at USC** - (213) 740-2101 diversity.usc.edu Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call dps.usc.edu, emergency.usc.edu Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call dps.usc.edu Non-emergency assistance or information.