

# *ECON 404: Games and Economics, Spring 2024*

Instructor: Jonathan Libgober

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<http://www.jonlib.com/>

Lecture time: MW 10AM-11:20AM

Location: DMC102

Office Hours: F 10:30AM-Noon, as well as immediately after class (and by appointment; check out

<https://jlibgober.youcanbook.me/> )

Teaching Assistant/Office Hours: TBA

## ***Course Overview:***

This is a course on game theory for undergraduates. As such, we will talk about the role of strategic interactions in guiding behavior, a topic that has wide ranging implications in fields ranging from finance, biology, law, and even literature (see Michael Chwe's *Jane Austen: Game Theorist*). Our goal will be to think about these topics systematically. At times we may also discuss mechanism design/contract theory and information economics. The goal is to help you think about strategic interactions which may help you apply economics in the future, and at times I will also try to give a flavor of the issues that arise on the frontier of economic research.

## ***Prerequisites:***

All that is necessary is intermediate microeconomics. It will also be necessary to have some basic calculus/optimization and an understanding of proofs; however, everything will be as self-contained as possible. However, a willingness to look things up is a must.

## ***Textbooks:***

The course (*very*) roughly follows *Game Theory: An Introduction*, Steven Tadelis. It is recommended that you purchase this one. I will also likely make extensive use of *A course in game theory*, by Martin Osborne and Ariel Rubinstein, which is free. Keep in mind this book is very difficult, and more appropriate for a PhD level class.

**A WORD OF CAUTION:** While I try very hard to make my lecture slides readable, they will almost surely be filled with typos, despite having used them several times. In my opinion, the existence of typos helps you learn more. But just be aware that this will likely be the case.

Below are added references I will use but are not required (or even recommended, given the cost):

*Game Theory: Analysis of Conflict*, Roger Myerson

*Contract Theory*, Patrick Bolton and Mathias Dewatripont

*Game Theory*, Drew Fudenberg and Jean Tirole

*Repeated Games and Reputations*, George Mailath and Larry Samuelson

*Microeconomic Theory*, Andreu Mas-Colell, Michael Whinston and Jerry Green

*Auction Theory*, Vijay Krishna

**Grades:**

The (tentative) grade breakdown is as follows:

- (1) Participation: 10%
- (2) (Likely 6, allowing one to be dropped) Problem Sets: 20%
- (3) Midterm: 30%
- (4) Final exam: 40%

Exams are closed book. Problem sets are to be handed in individually but you can work on them in groups of two, and no more than two. Each assignment will be handed in at the beginning of class on the due dates; late assignments are not accepted. If you must miss class, send it to me or the TA via email or put it in my mailbox.

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

If any in-class exam occurs at the same time as a day you can not attend, make sure to contact me before the third week of the semester to schedule an alternative date.

***All class materials and other information will be posted on Blackboard.***

**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).

***(Very tentative!) Topics and Lecture Breakdown:***

***The following is a list of topics that I will draw from. It is not exhaustive at all and very well may adapt even by the first lecture. Please let me know if there are any that you are fond of or don't like, as I may be able to adapt the course somewhat.***

Planned topics pre-midterm (13 classes):

- (1) Single-agent problems
- (2) Rationality and solution concepts: Nash Equilibrium, Dominant strategies
- (3) Epistemological foundations
- (4) Strategic interactions under incomplete information: BNE and applications
- (5) Mechanism Design: Vickrey-Clarke-Groves, Revenue Equivalence, Basics of Auction Theory

Planned topics post-midterm (13 classes):

- (1) Dynamic Games: Backward induction and one-shot deviation principle, Folk theorems
- (2) Bargaining: Rubinstein, Nash, Shapley, Baron-Ferejohn
- (3) Communication: Crawford-Sobel, Spence, Verifiable Disclosure, Kamenica-Gentzkow
- (4) Repeated Games and Reputations

## Support Systems

**Student Health Counseling Services** - (213) 740-7711 – 24/7 on call [engemannshc.usc.edu/counseling](http://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](http://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](http://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](http://equity.usc.edu), [titleix.usc.edu](http://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](http://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](http://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](http://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](http://dps.usc.edu), [emergency.usc.edu](http://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](http://dps.usc.edu) Non-emergency assistance or information.