



ECON-686b: Empirical Methods in Economics

Units: 4

Spring 2025—

Location: DMC 205

Instructor: Paulina Oliva and Thomas Chaney

Office: TBD

Office Hours: TBD

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Teaching Assistant: TBD

Office: TBD

Office Hours: TBD

Contact Info: TBD

IT Help: Dornsife Technology Services (DTS)

Hours of Service: M–F, 9:00am–5:00pm

Contact Info: <https://dtssupport.usc.edu>, ts@dornsife.usc.edu, 213-740-2775

IT Help: Information Technology Services (ITS)

Hours of Service: M–F, 9:00am–5:00pm

Contact Info: <https://itservices.usc.edu/>, consult@usc.edu, 213-740-5555

Course Description

This course covers the cutting-edge empirical methods for estimating models, designing experimental and non-experimental research projects, and understanding causal inference and prediction in economics. In this course we will go through several contemporary approaches to causal inference in economics. The overall aim is to equip PhD students with the knowledge to become better empiricists and economists. This course focuses on empirical methods designed to isolate causal effects in both experimental and non-experimental data, and understanding how to tie estimates to models for prediction. We will do this for both micro and macro research questions.

Learning Objectives

1. How to think about and design an empirical study in economics.
2. Understand and apply the following empirical methods for causal inference: (i) Experiments; (ii) Quasi-experiments; (iii) Non- and semi-parametrics.

Prerequisite(s): N/A

Co-Requisite(s): N/A

Concurrent Enrollment: N/A

Recommended Preparation: To register for this course, students must have passed their Core Theory Examinations.

Course Notes

The course must be taken for a letter grade.

Technological Proficiency and Hardware/Software Required

N/A

Required Readings and Supplementary Materials

Any required readings and supplementary materials will be provided in class or via Blackboard.

Description and Assessment of Assignments

Throughout the semester, Problem Sets will be assigned regularly, the deadlines for which may be found in the Weekly Breakdown section.

Grading Breakdown

Assessment Tool	Points	% of Grade
Midterm	20	20%
Problem Sets	20	20%
Research Paper Proposal	20	20%
Final	40	40%
TOTAL	100	100%

Grading Scale

Course final grades will be determined using the following scale:

Letter grade	Corresponding numerical point range
A	95-100
A-	90-94
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
F	59 and below

Assignment Submission Policy

Unless otherwise stated, assignments will be collected at the beginning of the class meeting when they are due.

Grading Timeline

Students can expect grading and feedback to be disseminated by the instructor or by the TA within 2-3 weeks of assignment submission.

Attendance

Students should expect to attend class regularly. Expected absences should be brought to the attention of the instructor as soon as the student is aware.

Academic Integrity

The University of Southern California is foremost a learning community committed to fostering successful scholars and researchers dedicated to the pursuit of knowledge and the transmission of ideas. Academic misconduct is in contrast to the university's mission to educate students through a broad array of first-rank academic, professional, and extracurricular programs and includes any act of dishonesty in the submission of academic work (either in draft or final form).

This course will follow the expectations for academic integrity as stated in the [USC Student Handbook](#). All students are expected to submit assignments that are original work and prepared specifically for the course/section in this academic term. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s). Students suspected of engaging in academic misconduct will be reported to the Office of Academic Integrity.

Other violations of academic misconduct include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see the [student handbook](#) or the [Office of Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#).

Please ask the instructor if you are unsure about what constitutes unauthorized assistance on an exam or assignment, or what information requires citation and/or attribution.

Collaboration

In this class, you are expected to submit work that demonstrates your individual mastery of the course concepts.

Group Work

Unless specifically designated as a 'group project,' all assignments are expected to be completed individually.

If found responsible for an academic violation, students may be assigned university outcomes, such as suspension or expulsion from the university, and grade penalties, such as an "F" grade on the assignment, exam, and/or in the course.

Course Content Distribution and Synchronous Session Recordings Policies

USC has policies that prohibit recording and distribution of any synchronous and asynchronous course content outside of the learning environment.

Recording a university class without the express permission of the instructor and announcement to the class, or unless conducted pursuant to an Office of Student Accessibility Services (OSAS) accommodation. Recording can inhibit free discussion in the future, and thus infringe on the academic freedom of other students as well as the instructor. ([Living our Unifying Values: The USC Student Handbook](#), page 13).

Distribution or use of notes, recordings, exams, or other intellectual property, based on university classes or lectures without the express permission of the instructor for purposes other than individual or group study. This includes but is not limited to providing materials for distribution by services publishing course materials. This restriction on unauthorized use also applies to all information, which had been distributed to students or in any way had been displayed for use in relationship to the class, whether obtained in class, via email, on the internet, or via any other media. ([Living our Unifying Values: The USC Student Handbook](#), page 13).

Course Evaluations

Course evaluation occurs at the end of the semester university-wide. It is an important review of students' experience in the class. Students can expect to receive an opportunity to provide course feedback either in person or online at the end of the term.

	Topics/Daily Activities	Professor	Readings/Preparation	Deliverables
Week 1	Introduction to Structural Methods and Using a Structural Model to test competing theories. Understand the different objectives of structural models and their advantages and disadvantages over reduced form estimation, and how a simple model for taxi driver labor supply that tests competing theories.	PO	Heckman 2010, Card, Della Vigna and Malmendier 2011, Farber 2008	
Week 2	Accounting for Selection using Structural Models. To understand identification in structural models. To model discrete-continuous outcomes.	PO	Ransom 1987, Bento et al. 2009, Asante et al. (work in progress)	
Week 3	Discrete Choice Static Models. To understand the basic structure of logit and probit models, including normalization and how to write the likelihood. To understand the implications of logit's IIA property for substitution patterns. To learn the role of taste variation, mixed logits and nested logits in overcoming IIA.	PO	Ken Train, "Discrete Choice Methods with Simulation", 2003	
Week 4	Demand System Estimation. To understand the difference between modeling the product space and the characteristic space. Estimation of demand systems using market level data. Estimation of demand systems using micro-data. .	PO	Berry Levinsohn and Pakes (1995), Berry Levinsohn and Pakes (2004), Nevo's 2012 NBER Lecture, and Nevo (2000)	
Week 5	Dynamic Discrete Choice Models. To understand dynamic decision making and the role of uncertainty. To learn how to use nested logits to model dynamic discrete decisions. Learn how to program a dynamic probit.	PO	Adda and Cooper, "Dynamic Economics", 2003, Bus engine replacement (1987), College attendance and graduation rates (Stange 2012, Heckman and Navarro 2005), Timber harvesting (Provencher 1997), Insurance coverage decisions (Einav et al. 2013), Housing demand (Caetano 2012), Smog checks (Oliva 2014)	Problem Set 4
Week 6	Micro to Macro: Structural counterfactuals and sufficient statistics in trade models. Learn the basics of modern international trade modes and derive robust aggregate predictions for the welfare gains/costs of international trade.	TC	Krugman, AER 1980, Scale Economies, Product Differentiation, and the Pattern of Trade Eaton and Kortum, ECMA 2002, Technology, Geography, and Trade (pp 1741-50) Chaney, AER 2008, Distorted Gravity: The Intensive and Extensive Margins of International Trade	

			Arkolakis, Costinot, Rodriguez-Clare, AER 2012, New Trade Models, Same Old Gains?	
Week 7	Micro to Macro: Structural estimation of trade models. Estimate key elasticities governing trade model, and structural estimation versus reduced form estimation of trade models.	TC	Eaton and Kortum, ECMA 2002, Technology, Geography, and Trade (pp 1751-79) Eaton, Kortum, Kramarz, ECMA 2011, An Anatomy of International Trade: Evidence from French Firms Caliendo Parro, REStud 2015, Estimates of the Trade and Welfare Effects of NAFTA	
Week 8	Micro to Macro: Model misspecification - "Robustness checks" in structural estimations. Understand model misspecifications in macro and robustness checks in reduced-form versus structural estimations.	TC	Andrews, Gentzkow, Shapiro, QJE 2017, Measuring the Sensitivity of Parameter Estimates to Estimation Moments Catherine, Chaney, Sraer, Thesmar, Journal of Finance 2022, Quantifying Reduced Form Evidence On Collateral Constraints Catherine, Ebrahimina, Sraer, Thesmar, WP 2023, Robustness Checks in Structural Analysis	Midterm
Week 9	Historical Data: Using historical shocks for identification (not just Napoleon). The "OK's" and "not-OK's" of identification with historical data.	TC	Giorelli and Moser, JPE 2020, Copyrights and Creativity: Evidence from Italian Opera in the Napoleonic Age Jukasz, AER 2018, Temporary Protection and Technology Adoption: Evidence from the Napoleonic Blockade Terry, Chaney, Burchardi, Tarquinio, Hassan, NBER 2022, Immigration, Innovation, and Growth	
Week 10	Historical Data: Textual data and Natural Language Processing tools	TC	Barjamovic, Chaney, Cosar, Hortacsu, QJE 2019, Trade, Merchants, and the Lost Cities of the Bronze Age Cadauid-Sanchez; Kacem; Aparecido Martins Frade; Boehm; Chaney; and Lashkari, WP 2022, Evaluating End-to-End Entity Linking on Domain Specific Knowledge Bases: Learning about Ancient Technologies from Museum Collections	<i>Problem Set 5</i>
Week 11	Case Studies and Replication	RM & MK		
Week 12	Case Studies and Replication	JS & GR		
Week 13	Case Studies and Replication	TA & PO		
Week 14	Case Studies and Replication	TC & MM		
Week 15	Presentations of Research Paper	RM/TA/PO/TC/JS/GR		
FINAL				

Statement on Academic Conduct and Support Systems

Academic Integrity:

The University of Southern California is a learning community committed to developing successful scholars and researchers dedicated to the pursuit of knowledge and the dissemination of ideas. Academic misconduct, which includes any act of dishonesty in the production or submission of academic work, comprises the integrity of the person who commits the act and can impugn the perceived integrity of the entire university community. It stands in opposition to the university's mission to research, educate, and contribute productively to our community and the world.

All students are expected to submit assignments that represent their own original work, and that have been prepared specifically for the course or section for which they have been submitted. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s).

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Students and Disability Accommodations:

USC welcomes students with disabilities into all of the University's educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems:

[Counseling and Mental Health](#) - (213) 740-9355 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

[988 Suicide and Crisis Lifeline](#) - 988 for both calls and text messages – 24/7 on call

The 988 Suicide and Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week, across the United States. The Lifeline is comprised of a national network of over 200 local crisis centers, combining custom local care and resources with national standards and best practices. The new, shorter phone number makes it easier for people to remember and access mental health crisis services

(though the previous 1 (800) 273-8255 number will continue to function indefinitely) and represents a continued commitment to those in crisis.

[Relationship and Sexual Violence Prevention Services \(RSVP\)](#) - (213) 740-9355(WELL) – 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender- and power-based harm (including sexual assault, intimate partner violence, and stalking).

[Office for Equity, Equal Opportunity, and Title IX \(EEO-TIX\)](#) - (213) 740-5086

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

[Reporting Incidents of Bias or Harassment](#) - (213) 740-5086 or (213) 821-8298

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

[The Office of Student Accessibility Services \(OSAS\)](#) - (213) 740-0776

OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

[USC Campus Support and Intervention](#) - (213) 740-0411

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

[Diversity, Equity and Inclusion](#) - (213) 740-2101

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

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) 442-1200 – 24/7 on call

Non-emergency assistance or information.

[Office of the Ombuds](#) - (213) 821-9556 (UPC) / (323-442-0382 (HSC)

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

[Occupational Therapy Faculty Practice](#) - (323) 442-2850 or otfp@med.usc.edu

Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.