



ECONOMICS 513, Practice of Econometrics

Units: 4

Fall Semester, Mondays and Wednesdays, 4:30-5:50pm

Location: DMC 156

Instructor: Ivo Steijn

Office: KAP 302B (Mondays and Wednesdays)

Office Hours: 3:30-4:30 Mondays and Wednesdays

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Office: TBA

Office Hours: TBA

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Course Overview

This course is an introduction to econometrics at a master's level. Econometrics refers to statistical tools used by economists to measure the relationships between various economic variables using data. After completing this course, students should be able to model econometric relationships, estimate and test these models, and interpret and use the estimation results for prediction and policy evaluation. After reviewing basic probability theory and statistics, we will start with the classical linear regression model, which is commonly used and forms the basis for many different econometric models. Next, we will review some of the many complications of this model, including the endogeneity problem. We will also discuss the Instrumental Variables (IV) approach, which is designed to tackle the endogeneity problem. Maximum likelihood estimation and test design is reviewed in some depth. We will then move on to various topics, including nonlinear regression models, time series and panel models, nonparametric regression models, and Indirect Inference.

This course assumes a basic knowledge of undergraduate-level calculus, linear algebra, and statistics.

However, all necessary linear algebra, statistics concepts and tools will be covered during the first part of the lectures.

Learning Objectives

This course aims to provide the students with comprehensive knowledge of widely used econometrics models and estimation methods. After completing this course, students should be able to perform data collection tasks, model econometrics relationships, estimate and test the model, and interpret and use the estimation results for prediction and policy evaluation.

Course Notes

Students should come to class on time to prevent lecture disruptions. Attending the lectures is crucial to your learning, and I strongly encourage students to attend the lectures and participate in class discussions.

Missing lectures is really not a good idea, but I understand, sometimes stuff happens.

Slides, notes, assignment solutions and exam answers will be posted on BrightSpace

You should check your grades on Brightspace regularly, and if you see any discrepancies, inform the instructor or your TA immediately.

Technological Proficiency and Hardware/Software Required

Some assignments will require software for the calculations. You can use STATA (free through the university) or R or whatever you like. Personally, I find Excel surprisingly useful for and capable of handling a lot of econometric modeling. If I had to pick a favorite software package I'd say EViews, sadly not free (to put it mildly).

Required Readings and Supplementary Materials

No books need to be purchased for this class, you will get everything you need from the slides and your notes.

Optional Readings and Supplementary Materials

There are a gazillion econometrics books out there, and it really depends what you're looking for. Ask me for suggestions if you're interested in a particular subject. Good general texts are:

Greene W, H. Econometric Analysis (7th edition)

Maddala G, S. Econometrics

Description and Assessment of Assignments

There will be assignments! The assignments will have deadlines and unless otherwise stated, you are required to hand in your assignment on BrightSpace or in person *on time!* If you are unable to do so for any reason, contact me early and often. Some assignments will be purely theoretical, others will be an application of that theory. You are allowed to work in groups of three on the assignments, make sure all your names are on the assignment if you do.

While there will be the temptation to copy each other's solutions for assignments, don't do it or you will be in trouble during the exams. Of which there will be two: a mid-term and a final. For both, you are allowed to have your notes or a book present – I'm not testing your ability to learn things by heart.

Participation

I will not give credit for active participation – your reward for active participation is my undying esteem, and assignments and the exams will be a lot easier. Ask questions – there are no stupid questions, although it can be stupid to NOT ask a question.

Grading Breakdown

Assessment Tool	% of Grade
Assignments	30%
Mid-term exam	30%
Final exam	40%
TOTAL	100%

Grading 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

The homework assignments and their due dates will be posted on the Brightspace. You must submit your homework assignments on time (and preferably typewritten). In addition, for all assignments that require statistical software, a computer printout of the estimation results must be attached to the homework. There will be no credit for late homework submitted after posting the solutions on Brightspace. Students must turn in their assignments as instructed by their TA. Please let me know if you need special accommodations to submit your assignment or take the exam.

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.

Academic dishonesty has a far-reaching impact and is considered a serious offense against the university. Violations will result in a grade penalty, such as a failing grade on the assignment or in the course, and disciplinary action from the university itself, such as suspension or even expulsion.

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 your instructor if you are unsure what constitutes unauthorized assistance on an exam or assignment or what information requires citation and/or attribution.

Course Schedule

	Dates	Topics	Notes
Week 1	8/26 8/28	Intro probability and statistics; linear algebra if needed	
Week 2	9/4	Regression, Linear regression and classical linear regression	No class on 9/2 (Labor Day)
Week 3	9/9 9/11	More regression, estimators and their properties	
Week 4	9/16 9/18	Testing in regression models, using Dummy variables	
Week 5	9/23 9/25	Problems in the regression model and how to spot and solve them	
Week 6	9/30 10/2	Maximum Likelihood Estimation and its toolkit	
Week 7	10/7 10/9	Limited Dependent variable models: logit, fractional logit, etc.	
Week 8	10/14 10/16	Time series models	MIDTERM EXAM 10/14!
Week 9	10/21 10/23	Dynamic models	
Week 10	10/28 10/30	Panel Data	
Week 11	11/4 11/6	Nonparametric models	
Week 12	11/13	Indirect Inference	No class on 11/11 (Veteran's Day)
Week 13	11/18 11/20	Some advanced topics	
Week 14	11/25	Econometrics in practice 1	No class on 11/27 (Thanksgiving)
Week 15	12/2 12/4	Econometrics in practice 2 Final review session	
FINAL EXAM	TBD		Refer to the final exam schedule in the USC <i>Schedule of Classes</i> at classes.usc.edu .

Statement on University Academic and Support Systems

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.

Student Financial Aid and Satisfactory Academic Progress:

To be eligible for certain kinds of financial aid, students are required to maintain Satisfactory Academic Progress (SAP) toward their degree objectives. Visit the [Financial Aid Office webpage](#) for [undergraduate-](#) and [graduate-level](#) SAP eligibility requirements and the appeals process.

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 consists 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) 740-2500

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.