Course:	Economics 318, 26101R Introduction to Econometrics
Units:	4
Term—Day—Time:	Spring 2026, Mon, Wed 8:00 - 9:20 a.m.
Location:	VPD-116
Instructor:	Manochehr Rashidian
Office Hours:	Mon, Wed, 12:00 - 1:30 p.m. KAP-116B I am also available by appointment.
Contact Info:	rashidia@usc.edu
Teaching Assistant:	Aruj Shukla
Contact Info:	arujshuk@usc.edu
Office Hours:	Tuesdays 9:00 –11:00 a.m., on Zoom; Zoom link Also available by appointment. Please book here or email me to find a time.
Teaching Assistant:	Akash Thakkar
Contact Info:	akashtha@usc.edu
Office Hours:	Mon, Wed, 4:30–5:30 p.m., KAP 337 Also available by appointment.
	Discussions: 26102R, 6:00 - 6:50 p.m. Mon, room GFS-107 26104R, 6:00 - 6:50 p.m. Wed, room KAP-137

Course Description and Overview

Econometrics is the application of statistical and mathematical methods to study economic relationships. It is vital for analyzing and quantifying these relationships and their applications in both macroeconomics and microeconomics. Econometrics enables the evaluation of public policy effects, the prediction of economic indicators, and the testing of microeconomic theories.

This course begins with a review of foundational probability and statistical concepts, including data presentation and the basics of univariate and bivariate random variables. It then transitions to estimating and interpreting population parameters, covering the properties of estimators and techniques for making inferences about these parameters using statistical methods.

The heart of the course is regression analysis. In the second half, students delve into simple and multiple linear regression, with attention to the assumptions underlying the linear model, model building, estimation, evaluating goodness-of-fit, testing or imposing theoretical constraints, and generating forecasts. The course also introduces techniques for handling violations of classical assumptions, modeling nonlinear relationships, and incorporating qualitative variables into regression models.

In the final segment, the course turns to time series analysis. Students will learn about regression with time-series data and techniques for managing issues unique to time-series datasets. If time allows, we will also touch on Nonparametrics and Machine Learning.

Learning Objectives

This course provides a solid foundation in statistics and econometrics, with a focus on applying regression techniques to analyze and interpret economic data and relationships. Students will learn how to collect and organize data, build and estimate econometric models, conduct hypothesis testing, and use model results for forecasting and decision-making. By the end of the course, students will be able to critically assess econometric research and apply these methods effectively in both academic and professional settings.

Prerequisite: Econ 317 or equivalent

Course Notes

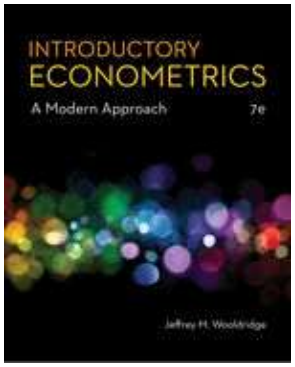
- **Punctuality**: Students are expected to arrive on time to avoid disruptions during lectures.
- **Attendance**: Regular attendance is crucial for success in this course. Active participation in discussions is strongly encouraged. Repeated absences may adversely affect your performance and could result in penalties at the end of the semester.
- **Note-Taking**: Students should take thorough notes but focus on understanding the lecture content rather than transcribing everything. Exam questions will be based primarily on material covered in class discussions. Please note that lecture notes are not a replacement for the textbook.
- **Lecture Materials**: When available, lecture slides and notes will be posted on Brightspace.
- **Homework and Exam Solutions**: Solutions for all homework assignments and exams will be made available on Brightspace.
- **Grade Monitoring**: Students should regularly check their grades on Brightspace and report any errors or discrepancies to the instructor or TA as soon as possible.
- **Prerequisites**: Enrollment in this course requires completion of Econ 317. Students should also have a solid understanding of both microeconomic and macroeconomic theory, as well as basic calculus.
- **Contingency Plan**: In the event that the University moves to remote instruction:
    - Lectures and office hours will be conducted via Zoom.
    - Homework assignments and exams will be administered through Brightspace.
    - For technical support, please refer to USC Technology Support resources.

USC Technology Support Links

USC Computing Center Laptop Loaner Program
Zoom information for students
https://www.brightspacehelp.usc.edu/
Software available to the USC Campus

Required Readings and Supplementary Materials

The required text is **Wooldridge, Jeffrey. "Introductory Econometrics, a Modern Approach,"** South-Western Cengage Learning. 7th Edition,



The textbook's website contains the data you need for your assignments. The website is: https://www.cengage.com/cgi-wadsworth/course_products_wp.pl?fid=M20b&product_isbn_issn=9781337558860&token=89EEF5AC408826CD381C3B27F19B3BD859B7EA69CEEC2862139E3103F28A65F8B5723398CC46DB404DBD2F5133810D34C7CE7229B0384EDDF43D55641137D5F4B0C5319725D38EF2

The class lectures are primarily organized in the same sequence as the textbook. But if you would like an alternative to your textbook, you can find the same topics in any of the following books.

Ramanathan, Ramu, Introductory Econometrics with Applications. 5th Edition.
Stock and Watson, *"Introduction to Econometrics,"* 3rd Edition, Addison-Wesley
Studenmund, A. H. Using Econometrics: A Practical Guide, Addison-Wesley Longman.
Goldberger, A. (Latest Edition). Introductory Econometrics, Harvard.
Hill, C., W. Griffiths, and G. Judge. Undergraduate Econometrics, Wiley
Gujarati, D. (Latest Edition), Basic Econometrics, McGraw-Hill.
Johnson, A., M. Johnson, and R. Buse, Econometrics: Basic and Applied.

Computer Software Information

Proficiency with statistical software is a key component of this course. You are welcome to use any well-known statistical programs for your assignments and classwork, including **SAS, STATA, R, MINITAB, EVIEWS, SPSS, or PYTHON**. Most of these programs and their documentation are accessible via the USC network. For class demonstrations, I will use **STATA**. If you wish to purchase your copy, the student version (STATA/BE) is available on the STATA website: STATA Student Pricing.

Description and Assessment of Assignments and Exams

- **Homework Assignments:**
  Homework assignments, drawn from chapter exercises, are listed in the course schedule (see below). Any updates will be announced in class and posted on Brightspace. In

addition to textbook exercises, supplementary problems based on class lectures will be assigned and made available on Brightspace or presented in class.
    - Assignments must be submitted on time, preferably in typewritten form.
    - Late submissions will not receive credit once solutions are posted on Brightspace.
- **Exams:**
  The course includes two midterm exams and a final exam.
    - All Exams will feature problem-solving and short-answer questions.
    - Second midterm exam is not cumulative, but reviewing earlier material is essential as chapters build on one another.
    - The final exam will cover selected chapters from throughout the course.
- **Group Project:**
  Students will also complete a group project that involves collecting data, constructing and estimating a model, and presenting the results. Detailed instructions and requirements for the group project will be provided during class.

Grading Breakdown

Weights for homework, projects, and exams are

Activity	Percentage of Grade
Homework and class participation	20%
Exam 1	20%
Exam 2	20%
Group Project	10%
Final exam	30%
Total	100%

Grading Scale

The course will be graded on the following 100-point scale, unless the class average falls below a B. In that case, I will adjust your grades using a curve based on the average performance of students who complete the course. Depending on the class performance, the class average will be assigned a grade of B.

Letter grade	Corresponding numerical point range
A	94 +
A-	90-93
B+	86-89
B	82-85
B-	78-81
C+	74-77
C	70-73
C-	66-69
D+	62-65
D	58-61
D-	54-57
F	53 and below

Assignment Submission Policy

The due dates for homework assignments will be announced in class or posted on Brightspace. Students must turn in their homework as instructed by their TA. Any assignment requiring statistical software must include a printout of the results. If you need any special accommodations for submitting your assignment or taking the exam, please let me know in advance.

Attendance

I anticipate my students' regular attendance during lectures, and I frequently record attendance. Students who consistently attend lectures will receive recognition, and those with excessive absences may be penalized at the end of the semester. It is essential for student-athletes and those observing religious holidays to notify me in advance of any scheduled class absences.

Course Schedule: A Weekly Breakdown (this is a tentative schedule; any changes will be announced in class or posted on the Brightspace)

Instruction Week	**Topics/Daily Activities**	**Readings and Homework Assignments**
Week 1 1-12, 1-14	**Appendix A, Read it yourself** **Appendix B**, Random variables and their probability distribution, Joint, marginal, and conditional distributions Expected value, variance, the standard deviation of random variables, and their properties Normal and related distributions	Appendix A: 4, 6, 8, 10 Appendix B: # 2, 4, 6(optional), 8, 10 *Class problem set* (1.5)

Week 2 1-21	**Appendix C**, Random sampling, Estimators, and estimates Finite and asymptotic properties of an estimator, Confidence interval, and hypothesis testing	Appendix C: #4, 6 Class problem set (1.5)
Week 3 1-26, 1-28	**Chapter 1,** Introduction to econometrics and the structure of economic data **Chapter 2,** Simple linear regression, deriving the OLS estimates **Last day to withdraw without a W, 9-12**	Chapter 1, # 2, C6 (0.5) Chapter 2, # 4, 10, C4, C8, Class problem set (1.5)
Week 4 2-2, 2-4	Interpretation of the parameter estimates SLR assumptions and properties of OLS estimates, testing a single parameter **Chapter 3,** Mechanics and interpretation of Multiple Linear Regression (MLR) Assumptions and properties of MLR, Efficiency of OLS Confidence intervals and Testing Hypotheses about a single population parameter	Chapter 3, # 4, 16, C2, C12 Class problem set (1.5)
Week 5 2-9, 2-11	Confidence intervals and Testing Hypotheses about a single population parameter in MLR **Chapter 4,** Testing for linear restrictions on parameters in MLR, t-test, and F-test	Chapter 4, # 4, 10, C6, C8 Class problem set (2.0)
Week 6 2-18	R^2 and its interpretation, testing for General linear restrictions, P-value, and its interpretation **2-18, EXAM 1 (tentative)**	
Week 7 2-23, 2-25	**Chapter 5,** Asymptotic properties of OLS, Large sample tests, the Lagrange Multiplier test **2-27, Last day to withdraw without a W**	Chapter 5, # C2, C3, C6 Class problem set (1.5)

Week 8 3-2, 3-4	**Chapter 6,** Econometrics modeling Using logarithmic functional forms Other nonlinear functions Adjusted R^2, Prediction, and Residual Analysis	Chapter 6, # 4, 8, C8, C12 Class problem set (2.0)
Week 9 3-9, 3-11	**Chapter 7,** Qualitative variables and use of dummy variables in regression analysis Interactions between dummy variables	Chapter 7, # 2, 8, C8, C10 Class problem set (2)
3-16, 3-18	**Spring Recess**	
Week 10 3-23, 3-25	Chow's test of model differences Binary dependent variables and the linear probability model Binary Response Model, Logit, and Probit Models **3-25, EXAM 2 (tentative)**	Lecture notes Problem (.5)
Week 11 3-30, 4-1	**Chapter 8,** Heteroskedasticity and its consequences Heteroskedasticity robust inference Testing for Heteroskedasticity Breusch-Pagan, White's, and other tests of heteroscedasticity Weighted Least Squares and its properties **4-3, Midterm grades are due**	Chapter 8, # 4, 6, C8, C14, Class problem set (2.0)
Week 12 4-6, 4-8	Feasible Generalized Least Squares and its properties **Chapter 10,** The nature of time series, Time series assumptions Finite sample properties of OLS **Last day to drop with a W, 11-14**	 Chapter 10, # 2, 4, C4, C14 Class problem set (1.5)
Week 13 4-13, 4-15	Trend and seasonality Spurious regression and how to correct for it **Chapter 12,** Serial correlation and heteroscedasticity in time series Properties of OLS with serially correlated errors	 Chapter 12, # 4, 6, C10, C12 Class problem set (2.0)

Week 14 4-20, 4-22	Testing for serial correlation of 1st order, t-test, and Durbin-Watson tests Correcting for 1st-order serial correlation FGLS and iterative FGLS methods Testing and correcting for higher-order serial correlation	
Week 15 4-27, 4-29	Robust inference with serial correlation Autoregressive conditional Heteroskedasticity (ARCH) model Heteroskedasticity and serial correlation in linear regression	
FINAL Exam	**Monday, May 11, 11:00 a.m. - 1:00 p.m.**	

Policy on Missed Exams

Students must take the exams as scheduled. There will be no makeup exams unless the student has a valid medical excuse and can provide documentation, or if a student cannot take the exam due to extenuating circumstances and prior arrangements have been made with the instructor. Students will receive zero credit for unexcused missed exams. The student will receive an F in the course if the final exam is missed due to an unexcused absence, regardless of the student's performance during the semester. If a student has a valid reason for missing the final exam and can document it, they will receive an incomplete grade.

Policy for the use of AI Generators in the course

I encourage you to use artificial intelligence (AI)-powered programs to help you with understanding the course material (As your private tutor). However, this course aims to develop creative, analytical, and critical thinking skills. Therefore, all assignments should be prepared by the student working individually or in groups. Students may not have another person or entity complete any substantive portion of the assignment. Developing strong competencies in these areas will prepare you for a competitive workplace. Therefore, using AI-generated text, code, or other content is prohibited in this course, will be identified as plagiarism, and will be reported to the Office of Academic Integrity.

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).

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, compromises 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).

Other violations of academic integrity include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), collusion, 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. All incidences of academic misconduct will be reported to the Office of Academic Integrity 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 your instructor if you are unsure what constitutes unauthorized assistance on an exam or assignment, or what information requires citation and/or attribution.

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.

CARE-SC: Confidential Advocacy, Resources, and Education Support Center - *(213) 740-9355(WELL) – 24/7/365 on call.*
Confidential advocates, prevention educators, and professional counseling teams work to promote a universal culture of consent, as well as prevent and respond to sexual assault, intimate partner violence, stalking, or other relationship harm. Services available to all USC students at no cost.

Office of Civil Rights Compliance - *(213) 740-5086*
Information about how to get help or help someone affected by harassment, discrimination, retaliation on the basis of a protected characteristic, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

USC Report & Response - (213) 740-2500

The USC Report & Response website is the university's central reporting portal for concerns arising in the academic space or workplace. All concerns will be assessed and referred to the appropriate university office for resolution. Any questions about USC Report & Response or reporting, in general, can be referred to the Office of Professionalism and Ethics at ope@usc.edu.

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*
Focuses on student success by assisting students in navigating and resolving complex issues through problem solving, presenting options, and connecting to resources.

USC Emergency Information
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
For 24 hour emergency assistance or to report a crime: UPC: (213) 740-4321, HSC: (323)-442-1000.
For 24 hour non-emergency assistance or information: UPC: (213) 740-6000, HSC: 323-442-1200.

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.