



**Course:** Economics 318, 26136R  
Introduction to Econometrics

**Units:** 4

**Term—Day—Time:** Fall 2024, Tue, Thu 10:00-11:20 am.

**Location:** GFS-101

**Instructor:** Manochehr Rashidian

**Office Hours:** Mon, Wed, 2:00-3:30 pm, KAP-116B  
I am also available by appointment.

**Contact Info:** [rashidia@usc.edu](mailto:rashidia@usc.edu)

**Teaching Assistant:** Minsoo Cho

Discussions:  
26311R, 6:00-6:50 Tue, room DMC-200  
26319R, 6:00-6:50 Mon, room DMC-109

**Office Hours:** 4:00-5:00 pm, Tue and Thu. KAP 3<sup>rd</sup> Floor-TA Room  
I am also available by appointment.

**Contact Info:** [minsooch@usc.edu](mailto:minsooch@usc.edu)

### Course Description and Overview

Econometrics is the study of economic relationships through statistical and mathematical methods. It plays a crucial role in analyzing and quantifying these relationships. It applies to both macroeconomics and microeconomics, allowing for the examination of the effects of public policy, the prediction of economic indicators, and the testing of microeconomic theories.

The course will begin with a review of fundamental concepts such as data presentation and univariate and bivariate random variables. Next, the focus will shift to estimating and interpreting population parameters. This section will explore the properties of estimators and the process of drawing inferences about population parameters using statistical methods.

The primary emphasis of the course is on regression analysis. The second part of the course will delve into simple and multiple linear regression models, exploring topics like the assumptions of linear regression, building and estimating regression models, assessing model fit, testing for parameter restrictions, and making forecasts. Additionally, the course will address techniques for relaxing classical assumptions of linear regression and handling nonlinearities and qualitative variables in regression analysis. In the final segment, the course will focus on time series analysis and regression with time-series data and dealing with the issues arising from the time-series nature of the data.

## Learning Objectives

This course aims to give students a solid foundation in statistics and econometrics, focusing on using regression methods to analyze and understand economic data and relationships. Upon completing the course, students will be able to collect and organize data, build econometric models, estimate and test the models, and use the results to make predictions. The goal is to enable students to understand, evaluate, and interpret econometric research in their studies and careers.

**Prerequisite:** Econ 317 or equivalent

## 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 can impact your standing in the class.
- Students are advised to take notes during lectures because exam questions are mainly on the subjects discussed in class. You should also know that your class notes are not substitutes for the textbook.
- Lecture notes, whenever available, will be posted on Brightspace.
- I will post the solutions for all homework assignments and exams on Brightspace.
- You should check your grades on the Brightspace regularly, and if you see any discrepancies, inform the instructor or your TA immediately.
- This course assumes that students have already taken Econ 317 and have a basic understanding of macro and microeconomic theories and elementary calculus.
- If deteriorating COVID conditions force the university to move online, we will use Zoom for lectures and office hours and Brightspace for exams and homework assignments. If you need help with Zoom or Brightspace, use the following technology support links:

## USC Technology Support Links

[USC Computing Center Laptop Loaner Program](#)

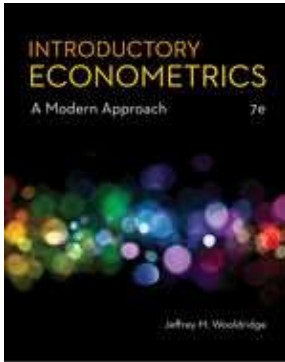
[Zoom information for students](#)

<https://www.brightspacehelp.usc.edu/>

[Software available to USC Campus](#)

## Required Readings and Supplementary Materials

The required text is **Wooldridge, Jeffrey "Introductory Econometrics, a Modern Approach,"** South-Western Cengage Learning. 7<sup>th</sup> 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](https://www.cengage.com/cgi-wadsworth/course_products_wp.pl?fid=M20b&product_isbn_issn=9781337558860&token=89EEF5AC408826CD381C3B27F19B3BD859B7EA69CEEC2862139E3103F28A65F8B5723398CC46DB404DBD2F5133810D34C7CE7229B0384EDDF43D55641137D5F4B0C5319725D38EF2)

The class lectures are mostly organized in the same sequence as the textbook. But if you don't like the presentation style of the text, you can find the same topics in any of the following books.

Ramanathan, Ramu, *Introductory Econometrics with Applications*. 5<sup>th</sup> Edition.

Stock, and Watson, *Introduction to Econometrics*, 3<sup>rd</sup> 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**

Learning how to use statistical software is part of the requirements for this course. If you are familiar with well-known statistical software such as SAS, STATA, R, MINITAB, EVIEWS, SPSS, and Python, you may use it for your assignments and classwork. Most software programs and their instructions are available on the USC network. I will use the STATA program for class demonstrations. If you prefer to have your copy of STATA software, the student version (STATA/IC) is available on the STATA website:

<http://www.stata.com/order/new/edu/gradplans/student-pricing/#>

### **Description and Assessment of Assignments and Exams**

The homework assignments from the chapters' exercises are in the course schedule (see below). Any changes will be announced in class and posted on Brightspace. In addition to the textbook questions, I will assign more problems from the class lectures, which I will post on Brightspace or present in class. You must submit the homework assignments on time, preferably in typewritten form. There will be no credit for any late homework submitted after I post the solutions on Brightspace.

We will have two quizzes, a midterm, and a final exam. Both quizzes and exams consist of problem-solving and short-answer questions. While the quizzes are not cumulative, students must review earlier material, as most chapters build upon one another. The final exam will cover selected chapters from throughout the course.

In addition to exams, students must complete a group project involving collecting data, building and estimating a model, and presenting the results. I will provide more information about the group project and its requirements in class.

### Grading Breakdown

Weights for homework, projects, and exams are

<u>Activity</u>	<u>Percentage of Grade</u>
Homework and class participation	20%
Quizzes	20% (10% each)
Midterm exam	20%
Group Project	10%
Final exam	30%
Total	100%

### Grading Scale

The course will be graded on a regular scale of 100% in the following table unless the class average falls short of 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 marked as a 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 have a printout of the results attached. If you need any special accommodations for submitting your assignment or taking the exam, please let me know in advance.

### Attendance

I anticipate regular attendance from my students during lectures and frequently record attendance. Students who consistently attend lectures will receive recognition, and those with excessive absences may be penalized at the semester's end. 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)**

	<b>Topics/Daily Activities</b>	<b>Readings and Homework Assignments</b>
<b>Week 1</b> 8-27, 8-29	<b>Appendix A, Read it yourself</b> <b>Appendix B,</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: # 4, 6(optional), 8, 12 Class problem set (1.5)
<b>Week 2</b> 9-3, 9-5	<b>Appendix C,</b> Random sampling, Estimators, and estimates Finite and asymptotic properties of an estimator, Confidence interval, and hypothesis testing	Appendix C: #4, 8 Class problem set (1.5)
<b>Week 3</b> 9-10, 9-12	<b>Chapter 1,</b> Introduction to econometrics and structure of economic data  <b>Chapter 2,</b> Simple linear regression, deriving the OLS estimates	Chapter 1, # 2, C6 (0.5)  Chapter 2, # 8, 12, C2, C10, Class problem set (1.5)
<b>Week 4</b> 9-17, 9-19	Interpretation of the parameter estimates SLR assumptions and properties of OLS estimates, testing a single parameter  <b>Chapter 3,</b> 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, # 2, 12, C4, C10 Class problem set (1.5)
<b>Week 5</b> 9-24, 9-26	Confidence intervals and Testing Hypotheses about a single population parameter in MLR  <b>Chapter 4,</b> Testing for linear restrictions on parameters in MLR, t-test, and F-test <b>Quiz 1, 9-26</b>	Chapter 4, # 6, 8, C4, C12 Class problem set (2.0)
<b>Week 6</b> 10-1, 10-3	$R^2$ and its interpretation, testing for General linear restrictions, P-value and its interpretation	

<b>Week 7</b> 10-8	<b>Chapter 5,</b> Asymptotic properties of OLS, Large sample tests, the Lagrange Multiplier test	Chapter 5, # 2, C2, C6 Class problem set (1.5)
<b>Week 8</b> 10-15, 10-17	<b>Chapter 6,</b> Econometrics modeling Using logarithmic functional forms  Other nonlinear functions Adjusted R <sup>2</sup> , Prediction, and residual analysis	Chapter 6, # 8, 10, C2, C4 Class problem set (2.0)
<b>Week 9</b> 10-22, 10-24	<b>Chapter 7,</b> Qualitative variables and use of dummy variables in regression analysis Interactions between dummy variables <b>Midterm Exam, 10-22</b>	Chapter 7, # 4, 12, C6, C14 Class problem set (2)
<b>Week 10</b> 10-29, 10-31	Chow's test of model differences Binary dependent variables and linear probability model  Binary Response Model, Logit, and Probit Models	Lecture Notes (Class problems) (0.5)
<b>Week 11</b> 11-5, 11-7	<b>Chapter 8,</b> Heteroskedasticity and its consequences Heteroskedasticity robust inference Testing for Heteroskedasticity Breusch-Pagan, White's and other tests of Heteroskedasticity Weighted Least Squares and its properties <b>Quiz 2, 11-7</b>	Chapter 8, # 2, 8, C6, C10, Class problem set (2.0)
<b>Week 12</b> 11-12, 11-14	Feasible Generalized Least Squares and its properties  <b>Chapter 10,</b> The nature of time series, Time series assumptions Finite sample properties of OLS	Chapter 10, # 2, 4, C6, Class problem set (1.5)
<b>Week 13</b> 11-19, 11-21	Trend and seasonality Spurious regression and how to correct for it  <b>Chapter 12,</b> Serial correlation and heteroscedasticity in time series Properties of OLS with serially correlated errors	Chapter 12, # 4, C4 (skip part iv), C16 Class problem set (2.0)

<b>Week 14</b> 11-26	Testing for serial correlation of 1 <sup>st</sup> order, t-test, and Durbin-Watson tests Correcting for 1 <sup>st</sup> -order serial correlation FGLS and iterative FGLS methods Testing and correcting for higher-order serial correlation	
<b>Week 15</b> 12-3, 12-5	Robust inference with serial correlation Autoregressive conditional Heteroskedasticity (ARCH) model Heteroskedasticity and serial correlation in linear regression	
<b>FINAL Exam</b>	<b>Thursday, Dec. 12<sup>th</sup>, 11:00 am- 1:00 pm</b>	

### **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 for such a reason or if a student cannot take the exam because of extenuating circumstances and prior arrangements are made with the instructor. Students will receive zero credit for unexcused missed exams. The student will receive an F for the course if the final exam is missed for 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.

### **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](#).

#### *Policy for the use of AI Generators in the course*

Since creating, analytical, and critical thinking skills are part of the learning outcomes of this course, 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 tools 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](https://osas.usc.edu). You may contact OSAS at (213) 740-0776 or via email at [osasfrontdesk@usc.edu](mailto: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](mailto: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.