CSUF | COLLEGE OF Business and Economics

Department of Economics
ECON 340: Economic Research Methods
Spring 2025

Instruction modality: In-person
Class and exam location: SGMH 2113
Class days and time: Tuesdays and Thursdays, 2.30-3.45 PM
Course website: dbhagia.com/econ340

Instructor: Div Bhagia
Office: SGMH 3361
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Phone: (657) 278-2914
Office hours: Tuesdays, 4-6.45 PM, or by appointment (in-person or on Zoom)

Course Information

Course Prerequisites

ECON 201, ECON 202, ISDS 361A

Course Catalog Description

Basics of applied economic research. How to access existing economic knowledge, locate and compile economic data, and analyze economic problems using theory and quantitative methods.

Additional Course Description

This course covers the basics of conducting quantitative economic research. The course aims to take you through the steps involved in answering a research question using observational data. You will learn and implement statistical and econometric concepts vital to empirical research. You will select a question, locate data to answer it, and use the tools we learn in this class to answer this question.

This course will involve hands-on work with data using R, a statistical software, both inside and outside the classroom. The tools learned in this class will be helpful regardless of whether your goal is to be a researcher, a consultant, run your own business, or work for a non-profit.

Student Learning Outcomes

Upon successful completion of this course, students will be able to discern valuable insights from datasets and communicate empirical findings effectively. In particular, you will:

1. Develop a strong grasp of both the conceptual and practical aspects of various statistical and econometric tools.
2. Learn to tidy, wrangle, manipulate, and visualize data using TidyVerse in R.
3. Be able to compute descriptive statistics, perform regression analysis in R, and present results in a clear, elegant manner.
4. Gain the skill to effectively communicate empirical findings.
5. Develop an understanding of causality, including the ability to identify and articulate potential threats to causal inference
6. Get an introduction to advanced topics at the forefront of economic research, such as quasi-experimental methods and machine learning.

Course Materials

All course materials—including lecture slides, handouts, notes for each topic—are available on the course website. These materials should generally be sufficient, and there is no mandatory textbook for this class. However, if you have a keen interest in the subject and seek additional references, the following options are excellent choices:

- Stock J, Watson M. Introduction to Econometrics (3rd edition)
- Huntington-Klein, Nick. 2021. The Effect: An Introduction to Research Design and Causality. https://theeffectbook.net/
- Cunningham, Scott. Causal Inference: The Mixtape. https://mixtape.scunning.com/

Software

You are required to use R for this course. R is a free software package for statistics and is available for download here. After installing R, you should also install R Studio, which provides a graphical interface for R.

Course Communication

All course announcements and individual emails are sent through Canvas, which only uses CSUF email accounts. Therefore, you MUST check your CSUF email regularly (several times a week) for the course duration.

Conduct in the Classroom

Use of phones, laptops, or other digital devices is not allowed during the lecture except when explicitly instructed to use one. Randomized Controlled Trials (RCTs) conducted at West Point show that in-class computer use inhibits learning. Here is a link to the paper. Tablets used for taking notes that remain flat on the desk are allowed.

Technical Problems

If you encounter any technical difficulties, contact the instructor immediately to document the problem. Then, contact: student IT help desk, email, phone = 657-278-8888, walk-in Student Genius Center, online chat - log into Portal; click "Online IT Help"; click "Live Chat."
For issues with Canvas: Canvas Support Hotline = 657-278-8888, search the CSUF Canvas Guides with AI Assistant, or report a problem.

Grading Policies and Standards

Grading Scale

Plus/minus grading will be used in this course. You are guaranteed at least the following grade if your weighted average course score falls within the specified range. A curve may be applied to the final grade.

98–100% = A+
93–97.99% = A (outstanding performance)
90–92.99% = A-
87–89.99% = B+
83–86.99% = B (good performance)
80–82.99% = B-
77–79.99% = C+
73–76.99% = C (acceptable performance)
70–72.99% = C-
67–69.99% = D+

63–66.99% = D (poor performance)
60–62.99% = D-
0–59.99% = F

Grade Breakdown

Your course grade will be determined according to the following breakdown:

Active Engagement	10
Problem Sets	20
Research Paper: Interim Submissions	15
Research Paper: Final Submission	15
Midterm	20
Final Exam	20
Total	100

Assignment Descriptions

- **Active Engagement**: Active engagement is crucial for success in this class. Please participate in class discussions and ask questions when topics need clarification. You can only do these things if you are in class, so please attend. Attendance will be taken occasionally. Participating in meetings to receive feedback on the research project is also considered active engagement. The active engagement grade also includes points from peer review from your research partners conducted at the end of the semester.

- **Problem Sets**: There will be four problem sets worth 5 points each over the semester. Feel free to seek help from your peers, but each person must submit their answers on Canvas.

- **Research Paper Interim and Final Submissions:** One of the main objectives of this class is to write a research paper using the tools you learn in this class. You can complete this project alone or with a classmate. In addition to the final submission of the research paper, you are also required to submit two progress reports. The first submission is worth 5 points, and the second submission is worth 10 points. The final submission is worth 15 points. Details on what is expected of the interim submissions and the final research paper are posted on the course website. I will also guide you through the process of selecting your question and data.

- **Exams**: There will be a midterm and a final. The exams will be mostly short-answer problems that cover the methods and material presented in the course. The final exam is not cumulative. Both exams will be in-person.

Make-up and Late Submission Policy

Make-up exams will only be offered under very limited circumstances, such as illness or other verified emergencies. It is your responsibility to notify your instructor either in advance or within 24 hours of missing an exam. Late assignments will not be accepted unless prior approval is obtained.

Extra credit

There are no extra credit options in this course.

CBE Assessment Statement

The programs offered in the College of Business and Economics (CBE) at Cal State Fullerton are designed to provide every student with the knowledge and skills essential for a successful career in business. Since assessment plays a vital role in the college's drive to offer the best, several assessment tools are implemented to constantly evaluate our program as well as our students' progress. Students, faculty, and staff should expect to participate in CBE assessment activities. In doing so, the college can measure its strengths and weaknesses and continue cultivating a climate of excellence in its students and programs.

Assurance of Learning (AoL) is an integral part of both our AACSB and WASC accreditation. Please visit the Assessment and Instructional Support website for more information on our college-based assurance of learning efforts, please visit the Assessment and Instructional Support website.

Important Student Information

It is the student's responsibility to read and understand the required and important information at this website: https://fdc.fullerton.edu/teaching/student-info-syllabi.html. Included is information about students' rights to accommodations for special needs, academic integrity and dishonesty, emergency preparedness, student learning goals and outcomes, general education, library support, and the final exam schedule.

Tentative Course Schedule

Date	Lecture	Module	Topics	Due
Tue 01/21	1	Describing Data	Introductions; Summation notation	
Thu 01/23	2		Distribution, mean, median, percentiles	
Tue 01/28	3		Variance, standard deviation, Z-score	
Thu 01/30	4		Covariance and correlation	
Tue 02/04	5		Research questions and data	Problem Set 1
Thu 02/06	6	Coding in R	Getting started with R	RP Team
Tue 02/11	7		Importing and cleaning data in R	
Thu 02/13	8		Describing variables in R	
Tue 02/18	9	Random Variables	Distribution, expectation, variance	Problem Set 2
Thu 02/20	10		Normal distribution, Z-score	
Tue 02/25	11		Independence, correlation	RP Submission 1
Thu 02/27	12	Sampling and Estimation	Sample mean distribution; Good estimators	
Tue 03/04	13		Confidence intervals	
Thu 03/06	14		Hypothesis testing and p-values	Problem Set 3
Tue 03/11	Review Class			
Thu 03/13	Midterm Exam			
Tue 03/18	Research Project Feedback			
Thu 03/20	15	Linear Regression	Ordinary least squares (OLS), Goodness of fit	
Tue 03/25	16		Prediction vs. causal inference	
Thu 03/27	17		Inference (p-values, t-stats, confidence intervals)	
	Spring Recess			
Tue 04/08	18	Linear Regression (cont.)	Omitted variable bias; Multiple regression model	RP Submission 2
Thu 04/10	19		Categorical variables; Interaction terms	
Tue 04/15	20		Quadratic and log functional forms	
Thu 04/17	21		Recap and synthesis	
Tue 04/22	22		Linear regression in R	Problem Set 4
Thu 04/24	23		Linear regression in R	
Tue 04/29	24	Advanced Topics	Experiments and quasi-experimental methods	
Thu 05/01	25		Panel data and event study designs	
Tue 05/06	26		Big data and machine learning	Final Paper
Thu 05/08	Review Class			
Thu 05/15	Final Exam (1–2.50 pm)			