UCSC Department of Economics
Spring 2024

ECON 104: Is There Truth in Numbers: The Role of Statistics in Economics

Instructor
Hamidreza Habibi (hhabibi1@ucsc.edu) Office Hours: Tue/Thurs 3:00PM-4:00PM (Location: E2-405F)

Lectures
Tue/Thurs 9:50 AM – 11:25 AM R Carson Acad 240

Teaching Assistants
Aiden Rho (harho@ucsc.edu) Office Hours: Mondays 9:00 AM - 11:00 AM (E2-403B)
Ken Suzuki (ksuzuki4@ucsc.edu) Office Hours: Fridays 3:00 PM - 5:00 PM (E2-403B)

Sections
01A (Aiden) M 02:40 PM-03:45 PM (Oakes Acad 103)
01B (Ken) W 01:20 PM-02:25 PM (Oakes Acad 103)
01C (Aiden) Th 05:20 PM-06:25 PM (Oakes Acad 103)
01D (Ken) F 12:00 PM-01:05 PM (Cowell Acad 223)

Course Description
Applies the techniques of econometrics and experimental economics to the understanding of economics. A "hands-on" course where real economic data is used in an interactive way so that students develop the art of empirical analysis. The course will focus on five research designs: randomized control trial (RCT), regression correction on observables, instrumental variables, regression discontinuity, and difference-in-differences.

Prerequisites
Econ 100A or 100M; and ECON 113, and Entry Level Writing and Composition requirements.

Required Textbook
Mastering Metrics: The Path from Cause to Effect by Angrist and Pischke
Assigned chapters include the appendix sections.

Software
Stata BE is sufficient for this class ($48 for 6 months license, can be installed on 3 computers)
Stata GradPlan: http://www.stata.com/order/new/edu/gradplans/student-pricing/ [click "6-month" tab]

Grades
Participation: 5%
Class Exercises: 15%
Article Summaries: 10%
Assignments: 20%
Paper 1 (draft and final): 25%
Paper 2 (draft and final): 25%

Assignments and paper drafts must be turned in on time and will be penalized one letter grade per day late.

Participation (5%): Class attendance is required. Participation grades will be based on questions and answers during lectures and sections. There will be no penalty if your absence is excused.

Class Exercises (15%): Class exercises will be given at the end of most sessions and will be graded on completion and accuracy. They will cover material from lectures.

Article Summaries (10%): You will be responsible for reading 5 assigned economic journal articles and writing one page (500 words) summarizing each (e.g., question, data, design, results). These articles supplement lecture material and provide more information that will be helpful for writing the course papers.

Assignments (20%): There will be 4 assignments during the quarter. They will use real data and will be graded on completeness, correctness, and the quality of your written explanations. You must submit the Stata do-files you used to generate your results. The results of the assignments will also be used to write the two course papers.

Papers (50%): Two research papers are worth 50% of your total grade for the course. Two first drafts are worth 10% each and the two final drafts are worth 15% each. Papers are graded on completeness and quality (of empirical work, structure, presentation, arguments, and exposition). The final drafts must be accompanied by a cover sheet that details, with bullets, the changes that were made to the paper since the first draft (tables and figures, grammar, details of your argument, flow, etc.).

Assignments, and papers will be submitted on Canvas.

Academic Integrity

All work submitted for this class must be your own. Collaboration on assignments is encouraged, but the answers and drafts you submit must be your own, in your own words, and based on your own understanding. Copying answers, Stata code, or language is a violation of university policy. Excellent resources to support your academic integrity appear on the UC Santa Cruz library webpage:
https://guides.library.ucsc.edu/citesources
https://guides.library.ucsc.edu/citesources/plagiarism
For more information on academic integrity at UC Santa Cruz, please see the following link:
https://ue.ucsc.edu/academic-misconduct.html

UCSC Writing Center

UCSC provides undergraduates with writing support through The Writing Center:
https://ucsc.mywconline.com/

DRC Accommodations

UC Santa Cruz is committed to creating an academic environment that supports its diverse student body. If you are a student with a disability who requires accommodations to achieve equal access in this course, please submit your Accommodation Authorization Letter from the Disability Resource Center (DRC) to me privately during my office hours or by appointment, preferably within the first two weeks of the quarter. At this time, I would also like us to discuss ways we can ensure your full participation in the course. I encourage all students who may benefit from learning more about DRC services to contact DRC by phone at 831-459-2089 or by email at drc@ucsc.edu.

Lecture Schedule (subject to change)

Lecture 1: Overview of course topics

Lecture 2: Review: Ordinary least squares, units of measurement

Lecture 3: Review: Hypothesis testing

Lecture 4: Randomized Control Trials: Potential outcomes (Mastering Metrics Chapter 1)

Lecture 5: Randomized Control Trials: Examples, balance (Mastering Metrics Chapter 1)

Lecture 6: Regressions: Omitted variable bias (Mastering Metrics Chapter 2)

Lecture 7: Regressions: Versus randomized control trials (Mastering Metrics Chapter 2)

Lecture 8: Instrumental Variables: Introduction (Mastering Metrics Chapter 3)

Lecture 9: Instrumental Variables: Intuition and Assumptions (Mastering Metrics Chapter 3)

Lecture 10: Instrumental Variables: 2SLS (Mastering Metrics Chapter 3)

Lecture 11: Regression Discontinuity: Introduction (Mastering Metrics Chapter 4)

Lecture 12: Regression Discontinuity: Sharp, Fuzzy, Graphing (Mastering Metrics Chapter 4)

Lecture 13: Regression Discontinuity: Specifications (Mastering Metrics Chapter 4)

Lecture 14: Regression Discontinuity: Balance and IV (Mastering Metrics Chapter 4)

Lecture 15: Difference-in-Differences: Introduction (Mastering Metrics Chapter 5)

Lecture 16: Difference-in-Differences: Design Options (Mastering Metrics Chapter 5)

Lecture 17: Difference-in-Differences: Examples and triple diffs (Mastering Metrics Chapter 5)

Lecture 18: Wages and Schooling (Mastering Metrics Chapter 6)

Lecture 19: Measurement Error

Lecture 20: Standard Errors