

Econometrics (I)

Fall 2026

Department of Economics, National Chung Cheng University

Instructor: 洪以儒 (Yi-Ju Hung)

Lecture: Tuesday & Thursday 10:10-12:00, College of Management 336

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Office Hours: Wednesday 14:00 - 16:30; ([Sign up Here](#))

Course Description

This course aims to provide students with an understanding of and experience with the key methods economists use to quantify the relationships among variables. A major goal is to prepare students to conduct statistical analyses themselves. We will focus on multivariate regression and causal inference. Topics will include functional form, heteroskedasticity, serial correlation, omitted variables and simultaneity bias, and instrumental variables. We will consider several types of data, including cross-sectional, time series, and panel data. Practical and theoretical issues will be discussed regarding how to distinguish correlations from causal effects.

A large part of this syllabus follows the course structure of the Introductory Econometrics course lectured by Vittorio Bassi and Jeffrey Weaver at the University of Southern California. I appreciate their generosity in sharing this material with me.

Readings

Required: Jeffrey M. Wooldridge, *“Introductory Econometrics: A Modern Approach”*

Note that you do NOT need to purchase the latest version of the textbook (7th edition); any edition after the 4th edition is fine

Supplementary: If you are interested in learning more, an excellent book is *Causal Inference, The Remix* by Scott Cunningham. Our framework is similar to what the book covers. You can find it [here](#)).

TA Sessions

During the weekly TA sessions, the TAs will instruct you on how to use Stata, which is necessary for completing the problem sets. You will also be tested on your knowledge of Stata during the exams. The TAs will also review important concepts from class and

problem sets.

The computer program Stata will be used extensively in the TA session. The program has good help facilities and guides available for free on the Internet. UCLA maintains an excellent website devoted to Stata (<https://stats.oarc.ucla.edu/stata/>). During the TA session, the TA will guide you to go over some key commands and exercise questions using Stata. Other popular sources for learning Stata include Statalist and StackOverflow.

Evaluation

1. Problem sets: 30%
2. Quiz: 20%
3. Midterm exams: 30% (15% each)
4. Final exam: 20%

Quiz: There are quizzes every one or two weeks. Most of the questions will be multiple-choice. It aims to help you review what we have learned in the previous week.

Problem Sets: Problem sets will include both analytical problems and empirical problems that involve computing. **I do not accept late problem sets.** You are permitted to work in groups on the problem sets, but you must do all your own computing and write up your own answers. You must indicate the names of group members on your assignment.

Topics

In this course, we will cover the following topics:

1. Fundamentals of Probability
2. Correlation and Causality
3. Regression
4. Statistical Inference
5. Cross-Sectional Design
 - Confoundedness

- Instrumental Variables
- Regression Discontinuity

6. Causal Panel Design

- Panel Data
- Difference-in-Differences

Additional Resources

Here are some useful resources (but not required) for this course, or future courses related to econometrics and applied microeconomics.

Econometrics: *Introduction to Econometrics* by Stock and Watson is another good textbook; however, it is at a slightly lower level than *Introductory Econometrics* by Wooldridge. *Mastering Metrics* and *Mostly Harmless Econometrics* by Angrist and Pischke emphasize the application tools we develop in this course. *Mostly Harmless Econometrics* is more advanced but is excellent material for graduate school.

Stata: *Microeconometrics Using Stata: Revised Edition* by Cameron and Trivedi provides an in-depth overview of econometrics with Stata. *Statistics with Stata* by Hamilton is also a good guide to Stata. UCLA and Princeton offer Stata guides, including tutorials, detailed help files, and web videos.