

ECON 3034 Introduction to Econometrics II

NATIONAL TSING HUA UNIVERSITY

Spring 2024

Instructor: Eric S. Lin

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Time and Location: Wednesday noon–3pm, CTM 103

Office Hours: By appointment

Course Webpage: Course materials will be available on the web through **eecl**ass.

Teaching Assistant: Julie Yang

Teaching Assistant Hours: TBA

TA will hold the office hours and also be available for consultation on homework.

Course Description:

This course is the second part of the introduction to econometrics sequence. The first part of the sequence introduces the basic idea of regression. OLS will be a nice estimation method under some “classical” assumptions. Based on the knowledge of classical linear regression model, we would explore different topics in five modules. The five modules include the statistics review, experiment (namely, RCT), panel data, instrumental variables, and DID & RDD. You are expected to have a firm grasp of the types of empirical research designs that can lead to convincing analysis and be comfortable working with actual data sets.

The primary focus of this course is on estimation theory (with extension to testing). Although the aim will remain on the underlying theory, students will be given several opportunities to gain “hand on” experience with real data set through homework assignments. I would encourage students to meet me frequently (or stop by TA’s office hours) during the semester and not wait until the day before the exam. If you are having difficulty with concepts early on, then it is likely that your difficulties will snowball and that there will be insufficient time to deal with your puzzles close to the exams. So please make use of my office hours to sort out difficulties as they arise.

Prerequisites:

Calculus, Statistics, and ECON 3033 or equivalent undergraduate level Econometrics

Required Textbook:

Basically, I will hand out weekly lecture notes which are the summary of textbooks.

- ◇ Wooldridge, J. M., 2020, *Introductory Econometrics: A modern approach*, 7th edition, South-Western.

Of course, there are lots of textbooks related to this course. If you have enough time, it would be also beneficial to check out some of the following references.

References:

Note that you don't need to buy the following books. The book list is just for your reference.

- ◇ Stock, J. H. and M. W. Watson, 2021, *Introduction to Econometrics*, 4th edition, Addison-Wesley.

Previously adopted textbook. It is a very popular undergraduate level textbook adopted in US. This book gives a huge amount of empirical examples and illustrates econometric concepts intuitively.

- ◇ Maddala, G. S. and K. Lahiri, 2009, *Introduction to Econometrics*, 4th edition, Wiley.

This book is well written and in general is deeper than our textbook. You could also find some fancy topics in Maddala's book such as bootstrap, Jackknife and GMM.

- ◇ Kennedy, P. A., 2008, *A guide to Econometrics*, 6th edition, MIT Press.

This book tries to verbally explain difficult econometric ideas and avoids heavy math.

- ◇ Pindyck, R. S. and L. R. Rubinfeld, 1998, *Econometric Models and Economic Forecasts*, McGraw-Hill.

This is my econometric textbook when I was a junior. It is quite easy to read.

- ◇ Ramanathan R., 2002, *Introductory Econometrics with Applications*, 5th edition, South-Western.

This book provides a number of practical applications. It is also self-contained. In Chapter 14, the author demonstrates the various steps involved in carrying out an empirical research project.

- ◇ Gujarati, D. N., 2010, *Basic Econometrics*, 5th edition, McGraw-Hill.

Previously adopted textbook.

- ◇ Johnston and DiNardo, 1997, *Econometric Methods*, 4th edition, McGraw-Hill.

If you are sort of familiar with matrix algebra, it is a nice book to build up the foundation of econometrics. It also serves the bridge to compensate the gap between undergraduate and graduate level econometrics.

Software: You are welcome to use any econometric packages such as *STATA*, *R*, *Eviews*, or *Limdep*.

Grading: Several problem sets will be passed out during the semester. Although there are benefits to be obtained from working in groups I would advise against students free-riding off other students. There will be two midterms and a term paper. Note that overdue assignment will **NOT** be accepted unless accompanied by a medical certificate. The same is true for the exams. To encourage you to ask questions in class, class participation accounts for 10%. The term paper will be graded in three parts: topic outline, rough draft, and final version of the term paper. Late submission of any of the three parts will lead to penalties on the entire term paper segment of your grade. Your final grade will base on the following table. Note that **NO** make-up exam will be offered.

Assignments	10%
Class Participation	10%
Midterm I	25%
Midterm II	25%
Term Paper	30%.

Course Organization: [Tentative!!]

1. **Organization and Pre-test**
Economic Statistics Skills Assessment (ESSA)
2. **Module I (Statistics Review) 1 weeks or 2 weeks depending upon ESSA scores**
3. **Module II (Experiment): 2 weeks**
4. **Module III (Panel Data): 3 weeks**
5. **Module IV (Instrumental Variables): 3 weeks**
6. **Module V (DID and RDD): 3 weeks**
7. **First Class Meeting Date [Feb. 21]**
8. **Term Paper Proposal Due [March 27]**
9. **Midterm Exam I [In Class] [April 3]**
10. **Term Paper Draft Due [April 24]**
11. **Midterm Exam II [In Class] [May 15]**
12. **Final Presentation [In Class] [June 5]**
13. **Term Paper Due [June 12]**