

Institute for Advanced Economic Research (IAER)
Academic Year 2023-2024
Term 1

COURSE TITLE (Econometrics I)

Instructor Name	: LUI Yiu Lim
Email	: allenlui@dufe.edu.cn
Office	: Boxue Building I-217
Office Hour	: To be Determined
Venue and Time	: To be Determined (Please refer to the weekly plan)
Teaching Assistant	: To be Determined
Email of Teaching Assistant	: To be Determined

COURSE DESCRIPTION AND LEARNING OBJECTIVES

This course is designed as a first graduate-level course in econometrics. The course emphasizes the **applications** of the law of large numbers and the central limit theorem. The goal of the course is to offer technical training in modern econometrics techniques, including estimation and inference in the classical regression framework, estimation and inference, generalized method of moments (GMM), and modern model selection techniques. After taking the course, students are expected to understand the mathematics which yield the classical results and be able to apply the results for empirical studies.

PREREQUISITE

Familiarity with probability, statistics, econometrics, and matrix algebra at the undergraduate level is assumed. I may review some undergraduate materials during the course.

ASSESSMENT METHODS

Problem Sets	: 20%
Mid-term Test (2.5 Hours)	: 30%
<u>Final Examination (3 Hours)</u>	<u>: 50%</u>
Total	: 100%

PROBLEM SETS (20%)

5 Problem Sets will be assigned throughout the semester. Students can work in a group to do the problem sets, but they must submit their own works. While 5 problem sets are graded, **the lowest one is not contributed to your final grade**. However, students who do not hand in 5 problem sets will face a 20% score penalty in your best 4 problem sets.

Working on assignments during the lectures is not allowed. Late submissions of assignments will not be accepted as the answer will be disclosed when the problem sets are collected.

MID-TERM TEST (30%) AND FINAL EXAM (50%)

The mid-term and final exams are both closed-book exams. Devices such as smartphone, tablet and laptops are not acceptable during exams.

TUTORIAL SESSION

The teaching assistant will hold tutorial sessions regularly.

ACADEMIC INTEGRITY

All acts of academic dishonesty (including, but not limited to, plagiarism, cheating, fabrication, facilitation of acts of academic dishonesty by others, unauthorized possession of exam questions, or tampering with the academic work of other students) are serious offenses.

All work (whether oral or written) submitted for purposes of assessment must be the student's own work. Penalties for violation of the policy range from zero marks for the component assessment to the expulsion of the IAER program, depending on the nature of the offense.

When in doubt, students should consult the instructors of the course.

EMERGENCY PREPAREDNESS FOR TEACHING AND LEARNING

Where there is an emergency that makes it infeasible to have classes on campus, classes will be conducted online via Tencent Meeting, with no disruption to the schedule. The instructor will inform students of which classes, if any, will be conducted online.

CLASS TIMINGS

Class sessions are of 2 hour 25 minutes duration per week. Each session will involve a lecture and a discussion of assignments and readings.

TEXTBOOKS

Required

- Hayashi, F. (2000). *Econometrics*. Princeton University Press.

Supplementary Books

1. White, H. (2014). *Asymptotic theory for econometricians*. Academic press.
2. Davidson, J. (1994). *Stochastic limit theory: An introduction for econometricians*. OUP Oxford.
3. *Econometrics, draft graduate textbook*, by Bruce Hansen, available from the author's website at <http://www.ssc.wisc.edu/~bhansen/econometrics/>

The lecture notes will also be provided.

WEEKLY PLAN

Here I specify the outline of topics this course covers. Keep in mind that this outline is meant to be a plan and is subject to change as we go along.

Lecture/Date		Topic
1	TBA	The Classical Linear Regression Model
2	TBA	Finite-Sample Properties of OLS
3	TBA	Finite-Sample Properties of OLS (Continued) (Problem set 1 is due)
4	TBA	Review on Finite-Sample Properties
5	TBA	Large-Sample Theory
6	TBA	Large-Sample Theory (Continued) (Problem set 2 is due)
7	TBA	Large-Sample Theory (Continued)
8	TBA	Review on Large-Sample Theory
9	TBA	Mid-term Exam
10	TBA	Single-Equation GMM
11	TBA	Single-Equation GMM (Continued) (Problem set 3 is due)
12	TBA	Multiple-Equation GMM
13	TBA	Multiple-Equation GMM (Continued)
14	TBA	Multiple-Equation GMM (Continued) (Problem set 4 is due)
15	TBA	Panel Data
16	TBA	Panel Data (Continued)
17	TBA	Serial Correlation (Problem set 5 is due)
18	TBA	Machine Learning (Ridge, LASSO, Elastic Net)

Updated on July 4, 2023