

ECON3334 Introduction to Econometrics

2023/2024 Fall Semester, Department of Economics, Hong Kong University of Science and Technology

Instructor Information

Instructor

Kohei KAWAGUCHI (Lecturer)

Peter Tsui (TA)

Email

kkawaguchi@ust.hk

ecpeter@ust.hk

Office Location & Office Hours

By appointment

LSK6066, Fri 2:00-3:30pm

Communication rule

- I set up a Discord server for communicating with students. I share the link to the server in the first lecture.
- I post teaching materials and communicate with students on the Discord server.
- Discord should be the primary way of contacting me. You can post your questions in #general channel or send me a direct message on Discord. If you send me a message by email, I may not respond to you.
- I will be responsive during the day but will be slow in the evening and weekend.
- You can make an appointment to see me in the office.

General Information

Description

This course introduces students to basic econometric techniques and their applications in empirical economic analysis. The course begins with a review of probability and mathematical statistics and focuses on linear regression models with one regressor and multiple regressors. Basic theory of estimation and inference will be introduced, with an emphasis on practical issues in econometric analysis of cross-sectional data. R will be used for computer-based calculations.

Intended Learning Goals

On completion of the course, you will be able to:

1. Understand the key assumptions used in regression models, and explain the relationship between those assumptions and properties of estimators.
2. Use regression for basic economic data analysis, conduct statistical inference, and interpret the results.
3. Use the software R to conduct basic econometric analysis.
4. Collect data to conduct your desired empirical analysis and provide answers to economic questions.
5. Present your understandings of certain economic problems and use empirical results to justify your explanation.

Class Time

Lecture: Tue, Thu, 10:30-11:50, Rm 1009, LSK Building.

Tutorial: Mo, 16:30-17:20, Rm 1033, LSK Building.

Course Materials

Textbook

Stock, James and Mark Watson. Introduction to Econometrics (4th edition), Pearson.

We will also use materials from the companion website:

https://media.pearsoncmg.com/intl/ge/2019/cws/ge_stock_econometrics_4/.

- We reserved a few copies in the library. eBook is also available from the library's website, although it only allows four concurrent users to access.
- Some problem sets are from the required textbook. You may use its previous editions, but you are responsible to make sure that your solutions are based on the 4th edition.

Slides, Problem Sets, and Other Materials

I will upload on Discord server.

Computer packages

R is used to apply the econometric tools to data. R is both a programming language and a software environment for statistical computing, which is free and open source. To get started you will need to install two pieces of software:

- R: <https://www.r-project.org/>
- RStudio: <https://www.rstudio.com/>

RStudio is an integrated development environment for R. You need to install R first.

I don't cover other languages, such as Stata, Python, and Matlab in this course.

Teaching and Learning Activities

Lectures

Please make sure to attend all lectures. Not all the topics in the textbook will be covered, and the ones I cover in the lectures will be the focuses of the exams. I will post slides before the lectures on Discord.

Tutorials

The TA will discuss problem sets in the tutorials. Tutorial sessions are not weekly. The TA will make an announcement via Discord before each session. No tutorial sessions in the first week.

Evaluation

A is for score ≥ 90 , B is for ≥ 70 , and C is for ≥ 50 .

1. **Problem Sets 20%:** There will be four analytical problem sets and 2-3 programming problem sets. Each problem set shares a weight of 5% towards the final grade. The score is based on the best 4 submissions. The problem sets will involve both theoretical and empirical work. You may discuss the questions and work in groups, but you must submit your own solutions.

2. **Midterm 30%:** Closed-book exam. The date time and venue will be discussed in the class.
3. **Final Exam 50%:** Closed-book exam. The final will be cumulative, covering all the course materials including those covered by the midterm.
4. You will need a very strong reason, substantiated by supporting documents, to miss any exam. Considering the advantage of having more time to prepare, the make-up exam, if permitted, is expected to be more difficult than the original exam.
5. Late submission of problem sets, for whatever reasons, will not be accepted.

Academic Integrity

Without academic integrity, there is no serious learning. Thus, you are expected to hold the highest standard of academic integrity in the course. You are encouraged to study and do homework in groups. However, no cheating, plagiarism will be tolerated. Anyone caught cheating, plagiarism will fail the course. Please make sure adhere to the HKUST Academic Honor Code at all time

<https://registry.hkust.edu.hk/>

Schedule

Course Schedule

The classes are all recorded and will be available online.

Topic	Reading
1 Introduction	Ch. 1
2 Review of Probability	Ch.2
3 Review of Statistics	Ch.3
4 Linear Regression with a Single Regressor: Estimation	Ch.4
5 Linear Regression with a Single Regressor: Inference	Ch.5
6 Linear Regression with Multiple Regressors: Estimation	Ch.6
7 Linear Regression with Multiple Regressors: Inference	Ch.7, 9
8 Instrumental Variable Regression	Ch. 12
9 Regression with Panel Data	Ch. 10
10 Linear Regression with Too Many Regressors: Big Data	Ch. 14