Introduction to Econometrics (ECON 3334, Spring 2025)

Department of Economics, HKUST

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Course Description:

This course will introduce students to econometric methods and their applications in economic analysis. It begins with a review of probability and statistics, followed by linear regression models with one regressor, linear regression models with multiple regressors. Emphasis will be put on practical issues in econometric analysis of cross-sectional data.

Prerequisites:

Basic statistics or consent of instructor.

Lecture schedule and location:

(L1) Tuesday & Thursday 9:00AM - 10:20AM. (Location: LSK Rm 1011)
(L2) Tuesday & Thursday 1:30PM - 2:50PM. (Location: G009B, CYT Bldg)

Tutorial Sessions:

The tutorial is NOT weekly. The TA will make an announcement through Canvas when there is a tutorial session. There is no tutorial during the first week. When there is a tutorial, the schedule and location will be as follows:

(T1) Friday 9:30AM - 10:20AM. (Location: LSK Rm 1009)
(T2) Tuesday 10:30AM - 11:20AM. (Location: LSK Rm 1007)

Textbook: Stock, James and Mark Watson (2019) "*Introduction to Econometrics*." 4th Edition, Pearson. You may also use other editions of the same title, but homework will be based on the 4th Edition.

- We also use the materials in the Companion Website: https://media.pearsoncmg.com/intl/ge/2019/cws/ge_stock_econometrics_4/
- A few copies of textbook are reserved in the library. E-book is also available from the library's website.

  It allows four concurrent users to access. You may also download up to 40 pages per day for offline reading.

  https://ebookcentral.proquest.com/lib/hkust-ebooks/detail.action?docID=5640381&pq-origsite=primo

Course Web Site: http://canvas.ust.hk

Slides, problem sets and other materials will be posted on Canvas. You should check the course website at least **twice a week** for important announcement such as the homework information.

Computer Software

- Data analysis will be mainly demonstrated using the free software R.
  - R is available at: https://www.r-project.org/. You may install R first. Then install Rstudio (https://rstudio.com/), which is an easy interface to use R.
- You may also use other software such as Eviews, Stata, gretl, Python, Matlab, etc (except Excel), to finish data-related problem sets. However, I will focus on R in my teaching. I will not teach or provide technical assistance for other software in this course.

Course Requirements:

Homework (15%): There will be 4 graded problem sets and some ungraded practice questions, assigned during the semester. These problem sets and practice questions focus on computational and analytical exercises. Each student must submit his/her **own answers** in their **own writing** individually. **Students must submit their solutions through Canvas**. Main solution files must be in **Microsoft Word or PDF format**. Data files must be read by Microsoft Excel. The due dates will be specified in each assignment. **Email or mail submissions will not be accepted.** Late submission including uploading failure will not be accepted without justification. If the submission occurs after the answer is posted, it will receive zero point.

In-class discussions and quizzes (5%): The will be a few in-class quizzes assigned during the semester. The timing of the quizzes will be announced through Canvas. No make-up will be arranged for the missing submissions. We will also hold in-class discussions of some practice questions and problem sets.

Midterm (25%): **Tentative Date：March 25th (Tuesday). Time and location TBA**
The midterm will cover all course materials before March 25th. A formula sheet will be provided.

Final (55%): **Date and location to be announced**.
The final will be cumulative and cover all course materials, including those covered in midterm.

Class Attendance: We will not take record of attendance but you are strongly encouraged to attend every lecture. I will selectively cover materials from the textbook. I will also cover examples from the latest academic research. My lecture contents will be the basis for exam questions.

Exam Policy:

- There will be no make-up exams for the midterm. If you miss the midterm, you will receive zero for that exam. The only exception is a verifiable medical reason, in which case the weight of the midterm will be moved to the final exam. If you miss the final exam, you will receive an "F"(fail) for the course. The only exception is that you successfully apply a make-up exam formally through the school. In such a case, I will allow you to do a make-up exam.

- There is zero tolerance of cheating in the exam. The case of cheating will be reported to both the department and the school level. We will check your **school ID cards** during exams.

Re-grading Policy: Contact your TA regarding any grading issue within one week from the time the grade is released.

Academic Integrity and Honesty: Students are required to comply with the university policy on academic integrity as detailed at https://registry.hkust.edu.hk/resource-library/academic-honor-code-and-academic-integrity

School Intended Learning Outcomes (**SILO**)

1. Critically evaluate practical economic models and exercise sound economic judgment in applying mathematical and economic principles to achieve justifiable solutions and making effective decisions supported by analytical and quantitative techniques.

2. Communicate quantitative and economic concepts and methods effectively to a range of audiences, both in oral and written forms.

3. Be effective users of information technology and use statistical and econometrics software to deal with databases in conducting empirical analysis in business applications.

4. Understand the professional and ethical responsibility and have informed ethical thinking based on rigorous quantitative and economic analyses

Course Intended Learning Outcomes: Upon completion of the course, you will be able to:

1. Weight the significance of key assumptions used in regression models, and explain the relationship between those assumptions and properties of estimators. (SILO 1, 3)

2. Construct an appropriate regression model to analyze a given economic data set, and then conduct statistical inference and interpret the results. (SILO 1, 3)

3. Use the statistical software R to conduct econometric analysis. (SILO 1, 2, 3)

4. Collect data set to conduct empirical analysis and answer economic questions. (SILO 1, 2, 3)

5. Present your understanding of certain economic problems verbally and in writing, and use empirical results to justify your explanation. (SILO 1, 2, 3,4)

You may find the details of School Intended Learning Outcomes (SILO) at https://bmundergrad.hkust.edu.hk/academics/academic-programs/learning-outcomes

Class Schedule:

Lectures	Topic	Reading
1	Topic 1: Introduction	Ch.1
2	Topic 2: Review of probability	Ch.2
3		Ch.2
4		Ch.2
5	Topic 3: Review of statistics	Ch.3
6		Ch.3
7	Topic 4: Linear regression with one regressor: estimation	Ch.4
8		Ch.4
9		Ch.4
10	Topic 5: Linear regression with one regressor: inference	Ch.5
11		Ch.5
12		Ch.5
13	Topic 6: Linear regression with multiple regressors:	Ch.6
14		Ch.6
15		Ch.6
16		Ch.6
17		Ch.6&14
18	Topic 7: Linear regression with multiple regressors: inference	Ch.7
19		Ch.7
20		Ch.7
21	Topic 8: Nonlinear regression functions	Ch.8
22		Ch.8&11
23		Ch.8&11
24	Topic 9: A guide for empirical analysis	Ch.9