

**Econ 4284  
Econometrics of Cross-sectional and Panel Data  
Fall 2018**

**Lecture Information:**

Monday and Friday

**Tutorial Information:**

Not weekly, to be announced on Canvas.

**Webpage:** <http://canvas.ust.hk/>

**Instructor Information:**

Instructor: Xun (Sean) Lu

Office: Room LSK6077

Office Hour: Monday 11:30am-12:30pm (or  
by appointment, or any time you can find me)

Phone: 2358-7616

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**Teaching Assistant (TA) Information:**

TA: Wilson Wan

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**Course Overview:** This course provides you with advanced econometric tools for analyzing cross-sectional and panel data. These tools are widely used in business, finance and other related fields. By the end of the course, you should be skilled users of these methods and should be able to interpret empirical studies in ways that are interesting, enlightening, and useful. You should also be aware of potential problems with regression analysis and know how to make corrections if these problems are present. Topics include: understanding problems of linear regression methods, instrumental variable estimation, panel data methods, and limited dependent variable models.

**Prerequisites:**

Introductory Econometrics (Econ 3334)

**Textbook**

Required:

Stock, James H., and Mark W. Watson. *Introduction to Econometrics*. (3rd edition), Pearson.

---This book is available at HKUST bookstore. Please note that there is a brief edition of this book, which is different from the third edition. You should NOT buy the brief edition.

Recommended:

Jeffrey M. Wooldridge. *Introductory Econometrics*. (4<sup>th</sup> edition), South-Western.

---This is another widely used textbook. This book is more difficult than the one by Stock and Watson, and is recommended for students who are not afraid of challenges.

## **Computer Package**

We will use the statistic software Stata to analyze data. You do NOT need to buy Stata. Stata is available in the computer lab **LSKG021**. I will reserve some time slots for ECON4284. The details will be announced on Canvas. Other time slots depend on whether the lab is occupied.

You can also access Stata in your own computer using "Virtual Barn" (more details will be provided).

## **Course Webpage**

I will distribute materials for this class through Canvas, so please make sure to check Canvas at least twice per week for announcements and postings.

## **Lectures**

Please make sure to attend all the lectures. There is a lot of information in the book, and my job is to explain the most important topics during class (which turn out to be the ones I focus on for exams). You are responsible for all material covered during lectures. Also, I may check attendance and give bonus points.

## **Tutorials**

We also have about 5 tutorials for this class that is separate from the lectures. The TA will teach you how to use Stata and solve some practice questions. Note that the tutorials are NOT weekly. Each time, the TA will post a note on what will be covered during the tutorials in advance. Most likely, the TA will go over some of the questions during the tutorials. A good strategy is to attempt the questions on your own, then get help during the tutorials.

## **Problem Sets**

There will be three problem sets, each of which will carry a weight of 5% towards the final grade. The problem sets will involve both theoretical and empirical work. Group study and free discussion are encouraged. But you should submit your own answers.

Each problem set is to be handed in at the beginning of class on the day it is due. Problem sets will not be accepted by email or in department mailboxes. If you need to hand in a problem set early because you cannot be in class on the day the problem set is due, then please make arrangements with your TA before the problem set is due. Late submission of problem sets will generally not be accepted!

## **Examinations**

There will be one in-class mid-term exam and one final exam. The midterm will carry a weight of 35% each. The final exam will have a 50% weight. The final is cumulative and will cover all the course materials.

All exams will be closed book. But you can bring ONE page (one-sided, A4-sized) of note, on which you can write down any information that is expected to be useful for the examination. It must be hand-written; photo reducing and pasting is not permitted. The purpose of this is to make it unnecessary to memorize formulas mechanically. Please also bring a basic scientific calculator (non-programmable) to the exams.

There will be no make-up exams. If you miss the midterm, you will receive a zero. The only exception is a verifiable medical reason, in which case the weight of the missed midterm will be shifted to the final exam.

Finally, if you are caught cheating during an exam, you will receive a zero on the exam, may fail the course, and may be subject to further disciplinary action by HKUST.

## Summary of Grading

The grades in this course will be based on the following:

### Grading Schedule

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15%	Three problems sets (each 5%)
35%	Mid-term
50%	Final Exam
100%	Total

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## Re-grading Policy

All grading problems and exams must be rectified within one week from the time a problem set or an exam is returned. Re-grading of exams may not be allowed if they were written in pencil. Please talk to the TA regarding the re-grading first. If there are some further issues, you can contact the instructor.

## Office Hours/Email

Please drop by during my office hours or the TA's office hours if you need help with anything. Send us an email if you have any concerns; we will try to respond within 24 hours. Please note, however, that emails are not the proper venue to answer particular problem set questions; we can help you with that during office hours or the tutorial.

## Learning Outcomes:

On completion of this course, you will be able to<sup>1</sup>:

1. Understand the main problems associated with liner regression methods, such as omitted variable bias (Objectives 1.1).
2. Apply basic asymptotic theory to analyze and evaluate different econometric methods (Objective 4.2).
3. Use appropriate econometric methods, such as instrument variable, panel data methods, and limited dependent variable methods, to conduct empiric analysis when linear regressions are not directly applicable (Objectives 1.2, 1.3, 1.4, 4.2 and 4.4)
4. Use econometric software to analyze a given economic data and interpret the results (Objective 7.3)

This course will also provide you with opportunities to enhance your skills on

5. Understanding economic phenomena using real economic data (Objective 4.1 and 4.3)

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<sup>1</sup> Numbers in parentheses are specific Program Intended Learning Outcomes (PILOs) for the BBA program (for details, see: <http://www.bm.ust.hk/econ/programs/BBA.html>.)

## Tentative Schedule

The most important thing to note here is that the schedule below is tentative, meaning that I may need to change things as the session progresses. Therefore, please do NOT make any travel plans or other commitments based on this schedule, since I may change the day of the midterm and the due date of the homework.

	<b>Date</b>	<b>Day</b>	<b>Topic</b>	<b>Readings</b>
1	Sep. 3	Mon	Topic 0: Introduction	
2	Sep. 7	Fri	Topic 1: LLN, CLT, Theory of Linear Regression	Ch 1-3, Handout
3	Sep. 10	Mon	Topic 1: LLN, CLT, Theory of Linear Regression	Ch 1-3, Handout
4	Sep. 14	Fri	Topic 1: LLN, CLT, Theory of Linear Regression	Ch 1-3, Handout
5	Sep. 17	Mon	Topic 2: Correlation and Causality	Ch 9
6	Sep. 21	Fri	Topic 3: Experiment and Quasi Experiment	Ch 13
7	Sep. 24	Mon	Topic 3: Experiment and Quasi Experiment	Ch 13
8	Sep. 28	Fri	Topic 4: Panel Data	Ch 10
9	Oct. 1	Mon	Holiday	
10	Oct. 5	Fri	Topic 4: Panel Data	Ch 10
11	Oct. 8	Mon	Topic 4: Panel Data	Ch 10
12	Oct. 12	Fri	Topic 4: Panel Data	Ch 10
13	Oct. 15	Mon	Mid-term	
14	Oct. 19	Fri	Topic 5: Instrumental Variables	Ch 12
15	Oct. 22	Mon	Topic 5: Instrumental Variables	Ch 12
16	Oct. 26	Fri	Topic 5: Instrumental Variables	Ch 12
17	Oct. 29	Mon	Topic 5: Instrumental Variables	Ch 12
18	Nov. 2	Fri	Topic 5: Instrumental Variables	Ch 12
19	Nov. 5	Mon	Topic 5: Instrumental Variables	Ch 12
20	Nov. 9	Fri	Topic 5: Instrumental Variables	Ch 12
21	Nov. 12	Mon	Topic 6: Maximum Likelihood Estimator	Ch 11
22	Nov. 16	Fri	Topic 7: Limited Dependent Variables	Ch 11
23	Nov. 19	Mon	Topic 7: Limited Dependent Variables	Ch 11
24	Nov. 23	Fri	Topic 7: Limited Dependent Variables	Ch 11
25	Nov. 26	Mon	Topic 7: Limited Dependent Variables	Ch 11
26	Nov. 30	Fri	Final Review	

- This schedule is tentative; I may need to adjust it as the session progresses. DO NOT make travel plans or other commitments based on this tentative schedule since I may move the Midterm to a different day.
- You should try to read the entire chapter, but particularly focus on the sections in each chapter that contain the material we cover during the lectures.