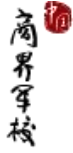




**PHBS**  
北京大学汇丰商学院



# Econ533 Applied Econometrics Module 4, 2021-22

## Course Information

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**Teaching Assistant: TBD**

Office:

Email:

Office Hour:

**Classes:**

Lectures: Monday & Thursday 15:30 - 17:20 pm (Beijing Time)

Venue: Online

**Course Website:**

<https://cms.phbs.pku.edu.cn/>

## 1. Course Description

### 1.1 Context

Course overview:

This is a required course for the master students in Economics and related areas. It aims to introduce skills that are useful for applied research and further studies. Students will learn how to use econometric theories and methods to analyse a variety of real world problems in economics, finance and other fields. Topics covered include linear regression, prediction, time series and panel data analysis, nonlinear models and others. Emphasis will be placed on the analysis of empirical questions using actual datasets and statistical packages.

Prerequisites:

Math, Probability distribution, Statistics

### 1.2 Textbooks and Reading Materials

Recommended Readings:

[1]Using Econometrics: A Practical Guide, 7e, by Studenmund

[2]Introductory Econometrics, 7e, by Wooldridge

[3]Introduction to Econometrics, 3e, by Stock and Watson

[4]Introduction to Econometrics, 3e, by Dougherty

The textbook that the lecture notes follow most closely is *Using Econometrics: A Practical Guide*. It is a very good book. Unfortunately, it is also a very expensive textbook, as all econometrics textbooks are. You do not need to purchase an econometrics textbook, but if you would like to be able to read a textbook from time to time, I would suggest buying a used copy of Studenmund, but really any econometrics textbook published in the last 10 years is probably worthwhile.

We will use CMS (<http://cms.phbs.pku.edu.cn/>) to manage the course. The course website will appear as **Econ533: Applied Econometrics** in your CMS course list. I will send email announcements through CMS and post all related course materials there. Please check the course website every week.

#### Statistical Package:

One goal of this course is to equip students with the skills of making statistical analysis using packages such as STATA, SAS, MATLAB, R and others. Software analysis is heavily used in advanced classes, industries and academia. I will demonstrate examples with STATA in class. Students may choose among the popular packages according to your own preference.

To get the package, you can visit the school webpage for the instruction of STATA and SAS installation and MATLAB webpage for a student version. R is downloadable from the official webpage <http://www.r-project.org/>.

Some recommended tutorials for using the statistical packages are:

- [1] Emmanuel Paradis. *R for beginners*.
- [2] Lora D. Delwiche and Susan J. Slaughter. *The Little SAS BOOK*.
- [3] STATA tutorial: <http://data.princeton.edu/stata/> .

## 2. Learning Outcomes

### 2.1 Intended Learning Outcomes

Learning Goals	Objectives	Assessment (YES with details or NO)
1. Our graduates will be effective communicators.	1.1. Our students will produce quality business and research-oriented documents.	Assignment, exams and group project
	1.2. Students are able to professionally present their ideas and also logically explain and defend their argument.	Assignment, exams and group project
2. Our graduates will be skilled in team work and leadership.	2.1. Students will be able to lead and participate in group for projects, discussion, and presentation.	Group project
	2.2. Students will be able to apply leadership theories and related skills.	
3. Our graduates will be trained in ethics.	3.1. In a case setting, students will use appropriate techniques to analyze business problems and identify the ethical aspects, provide a solution and defend it.	Assignment, exams and group project
	3.2. Our students will practice ethics in the duration of the program.	
4. Our graduates will have a global perspective.	4.1. Students will have an international exposure.	
5. Our graduates will be skilled in problem-	5.1. Our students will have a good understanding of fundamental theories in	Assignment, exams and group

solving and critical thinking.	their fields.	project
	5.2. Our students will be prepared to face problems in various business settings and find solutions.	Assignment, exams and group project
	5.3. Our students will demonstrate competency in critical thinking.	Assignment, exams and group project

## 2.2 Course specific objectives

As a student in this class, you should become a better economist, researcher, and statistician. You should gain a solid understanding of what good research questions are, what valid answers look like, and how data can and cannot be used to answer questions. You will also be required to expand your knowledge of Stata - one of the most common statistical software programs. Statistical analysis in the workplace relies exclusively on software, or, more specifically, on workers who can use and understand statistical software. After completing this course, you will be able to include on your resume that you have a working knowledge of Stata. This will be very appealing to potential employers and graduate programs.

In terms of your being evaluated in this class, there are three learning objectives:

1. Econometric Theory: You will learn the ideas, techniques, and shortcomings of classical regression. You will be able to demonstrate the mathematical properties of ordinary least squares estimation, and you will learn several advanced estimation procedures.
2. Stata: You will develop a working knowledge of Stata.
3. Understanding Journal Articles: You will develop a broad enough understanding of econometrics so you can understand empirical journal articles.

## 2.3 Assessment/Grading Details

Students are expected to attend all lectures, participate in class discussions, and read the required class materials. The course grade will be determined by:

[1] Class participation (10%)

[2] Homework (20%)

There will be four assignments which are individual work.

[3] Midterm (30%)

[4] Final presentation (40%)

### Explanation:

#### Class participation:

Class participation grades reflect the instructors' judgment of the students' contribution to the learning environment. The grades take into account (1) the **frequency** of the students' response in class, and (2) the **quality** of the response (e.g., relevance to course materials; insights that differ from others' point of view; elaboration or clarification of others' opinions) as well as (3) the **professionalism** of the students' conduct (e.g., attendance, punctuality, preparedness, and behaviour during the class). The class participation score will be differently graded as full score, half score, or zero score for each student.

#### Homework:

Problem sets are usually assigned every two weeks. You have to turn in your own problem set before the deadline announced. Suggested answers with detailed explanation will be posted on the Course Website after the deadline of each problem set. Please note that NO late submissions will be accepted.

If you have any questions about the problem sets, please seek help from me or TA.

### Midterm and Final Exams:

There will be ONE midterm exam. The midterm exam will cover lecture materials, problem sets and assigned reading (if any). The midterm exam is scheduled in class on **Dec 22, 2021**. Please make sure your availability. It may contain essay-type questions which require explanation in writing, graph and calculation.

The final exam is in the form of group project presentation. I will give you several datasets and ask you to run the hypothetical projects and answer a few mini-case questions. We'll talk about more details in class.

**Reschedule exam** will be provided for students who is unable to participate in the scheduled exam (medical statement, etc. must be provided). A penalty of 10-percentage points will be applied against the rescheduled exam score. There is only one reschedule exam and no other exam make-up options will be available. The date will be scheduled and announced by the instructor.

## **2.4 Academic Honesty and Plagiarism**

It is important for a student's effort and credit to be recognized through class assessment. Credits earned for a student work due to efforts done by others are clearly unfair. Deliberate dishonesty is considered academic misconducts, which include plagiarism; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; or altering, forging, or misusing a University academic record; or fabricating or falsifying of data, research procedures, or data analysis.

All assessments are subject to academic misconduct check. Misconduct check may include reproducing the assessment, providing a copy to another member of faculty, and/or communicate a copy of this assignment to the PHBS Discipline Committee. A suspected plagiarized document/assignment submitted to a plagiarism checking service may be kept in its database for future reference purpose.

Where violation is suspected, penalties will be implemented. The penalties for academic misconduct may include: deduction of honour points, a mark of zero on the assessment, a fail grade for the whole course, and reference of the matter to the Peking University Registrar.

For more information of plagiarism, please refer to *PHBS Student Handbook*.

## **3. Topics, Teaching and Assessment Schedule**

This course will cover the most fundamental and important topics in applied econometrics. The following is a tentative schedule for the module. Note that this is preliminary and not a binding legal contract, as how fast we can cover these topics depends to some extent on you. The instructor may modify it and all changes will be announced in class and be posted on the course website. Some of the topics listed above might not be covered if we run out of time.

### Approximate Schedule

Session/Date	Topic	Reading	Assignment Due
Session 1 (May 2)	Introduction	Chapters 1	

Session 2 (May 4)	OLS	Chapter 2	
Session 3 (May 5)	Classical Model and Assumptions	Chapter 3	
Session 4 (May 9)	Hypothesis Testing	Chapter 4	Homework #1
Session 5 (May 12)	Hypothesis Testing(continued)	Chapter 5	
Session 6 (May 16)	Specification (Functional Forms; Binary outcome /covariates)	Chapter 6	
Session 7 (May 19)	Specification (Omitted variables; Irrelevant variables))	Chapter 7	
Session 8 (May 23)	Multicollinearity	Chapter 8	Homework #2
Session 9 (May 26)	Heteroskedasticity	Chapter 9	
Session 10 (May 30)	<b>In-class Midterm Exam</b>	Chapter 1-9	In-class Exam (10:30-12:00 pm)
Session 11 (Jun 2)	Discussion Midterm; Working example to summarize chapter 1-9		
Session 12 (Jun 6)	Time Series	Chapter 10	Homework #3
Session 13 (Jun 9)	Forecasting	Chapter 12	
Session 14 (Jun 13)	Panel Data (Fixed Effects; Random Effects)	Chapter 16	
Session 15 (Jun 16)	Identification: DID	Most Harmless Econometrics	Homework #4
Session 16 (Jun 20)	Identification: Regression Discontinuity	Most Harmless Econometrics	
Session 17 (Jun 23)	Identification: IV	Most Harmless Econometrics	

Session 18 (Jun 27)	Review Session		
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#### **4. Miscellaneous**

Students are expected to arrive for class on time and the instructor will start the class according to schedule. Students should demonstrate respect for the instructor and fellow students during the class period. Please try to avoid side conversations when your classmates raise questions or give comments. You are welcome to bring your laptop or iPad to class for learning purposes. However, you may not engage in distracting behaviour such as chatting or making phone calls.