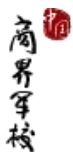




# PHBS

北京大学汇丰商学院



## ECON531 Advanced Econometrics I 2<sup>nd</sup> Module, 2022

### Course Information

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**Instructor: Liang Chen**

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Office Hour: Monday 15:30-17:30

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Phone:

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**Classes:**

Lectures: Mon&Thur 13:30-15:20

Venue: PHBS Building, Room XXX

### 1. Course Description

#### 1.1 Context

Course overview: The course objective is to learn econometric methodologies that are widely used in empirical research papers. Students will learn theory and interpretation from analysis of economic data. This course will help students use and understand regression, asymptotic analysis and intuition behind widely used econometric models.

Prerequisites: Mathematics (GEN500) or Business Mathematics (ECON500), Econometrics (ECON530)

#### 1.2 Textbooks and Reading Materials

There are no required textbooks in this course. Students are expected to have completed undergraduate econometrics. The textbooks that are used as main reference for lectures are as follows.

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

Wooldridge, J.M. (2010). *Econometric Analysis of Cross Section and Panel Data*, MIT press.

Other recommended textbooks are as follows.

Hamilton, J.D. (1994). *Time Series Analysis*, Princeton University Press.

Stock, J.H., Watson, M.W. (3<sup>rd</sup> edition). *Introduction to Econometrics*, Person Education.

Green, W. (2008). *Econometric Analysis*, Prentice Hall.

## 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.	No.
	1.2. Students are able to professionally present their ideas and also logically explain and defend their argument.	No.
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.	No.
	2.2. Students will be able to apply leadership theories and related skills.	No.
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.	No.
	3.2. Our students will practice ethics in the duration of the program.	No.
4. Our graduates will have a global perspective.	4.1. Students will have an international exposure.	Yes, the course is taught in English full-time.
5. Our graduates will be skilled in problem-solving and critical thinking.	5.1. Our students will have a good understanding of fundamental theories in their fields.	Yes, students will learn fundamental theories in Econometrics.
	5.2. Our students will be prepared to face problems in various business settings and find solutions.	Yes, by understanding methodologies used in economic research.
	5.3. Our students will demonstrate competency in critical thinking.	Yes.

### 2.2 Course specific objectives

### 2.3 Assessment/Grading Details

Midterm exam: 40%

Final exam: 60%

I will periodically assign problem sets throughout the course. Although they will not be collected or graded, it is very important to do them, as they are the best way to learn and prepare for the exams.

There will be no make-up exam, *no exceptions*. If you miss an exam due to medical reasons, and a doctor's certificate is provided, your grade will be determined by the other exam you have taken. For example, if you miss the final exam, your final exam score will be counted as 70% of your midterm exam score.

Both midterm and final exams are closed-book, you cannot bring anything except for stationery items (such as pencils and pens). Any student found responsible for violating academic honesty (see 2.4) will earn a failing grade for the course.

## **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**

### **Week 1: Review of mathematics and basic econometrics**

Thur: Linear Algebra, probability, statistics

Mon: Linear regression, estimation, hypothesis testing, large sample theory

### **Week 2: OLS regression**

Thur: Formulas of OLS, finite sample properties of OLS

Mon: Large sample theory of OLS

### **Week 3: Instrumental variable (IV) method**

Thur: Endogeneity in econometrics, IV estimation, 2-step least squares estimation

Mon: Applications of IV estimation

### **Week 4: General method of moments (GMM) estimation**

Thur: The definition of GMM estimator, large sample properties of GMM estimator

Mon: Applications of GMM estimation

### **Week 5: Review and Midterm Exam**

Thur: Review

Mon: Midterm Exam

### **Week 6: Models for limited dependent variables**

Thur: Maximum likelihood estimator

Mon: Probit and Logit models

### **Week 7: Estimation of treatment effects**

Thur: Propensity score matching, difference-in-difference, regression discontinuity design

Mon: Applications

### **Week 8: Introduction to panel data models and time series models**

Thur: Panel data models, random-effects and fixed-effects estimators

Mon: Introduction to time series models

## **Week 9: Final review**

Depending on our pace throughout the module, topics may be added or omitted. Not all topics will be covered in the same detail.