

ECON 532

Applied Econometrics

1st Module, 2020-2021

Course Information

Instructor: Yizhen Gu

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Office Hour: Tue & Fri, 3:30-4:30pm or by appointment

Teaching Assistant: TBA

Phone: TBA

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Classes:

Lectures: Tue & Fri, 10:30am-12:20pm

Venue: PHBS Building, Room TBA

Course Website:

TBA

1. Course Description

1.1 Context

Course overview: The goal of this course is for students to learn a set of statistical tools and research designs that are useful in conducting high-quality empirical analysis on topics in applied microeconomics and related fields. Since most applied economic research has direct policy or business implications, this course will focus on methods for estimating causal effects and is oriented towards applied practitioners. It therefore emphasizes research design (relative to statistical technique) and applications (relative to theoretical proofs). This course also intends to cover basic principles and tools when working with big data given their increasing application in the real world.

Prerequisites: Students are expected to complete Advanced Econometrics I or should be familiar with basic probability and statistics, matrix algebra, and the classic linear regression model.

1.2 Textbooks and Reading Materials

The course mainly uses lecture notes compiled by Michael Anderson, which are based on Guido Imben's econometrics notes. The course will also make reference to the three textbooks listed below.

(CT) Cameron, A. Colin, and Pravin K. Trivedi. Microeconometrics: Methods and Applications. Cambridge University Press, 2005.

(W) Wooldridge, Jeffrey M. Econometric Analysis of Cross Section and Panel Data. MIT Press, 2010.

(AP) Angrist, Joshua D., and Jorn-Steffen Pischke. Mostly Harmless Econometrics. Princeton University Press, 2008.

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.	Yes. Written exam.
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.	Yes. Written exam.
	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.	No.
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. Written exam.
	5.2. Our students will be prepared to face problems in various business settings and find solutions.	Yes. Written exam.
	5.3. Our students will demonstrate competency in critical thinking.	Yes. Written exam.

2.2 Course specific objectives

This course aims to get students familiar with statistical tools and research designs that are useful for identifying causal effects. By the end of the course, students will be able to independently conduct data analysis for academic, policy or business purposes.

2.3 Assessment/Grading Details

Attendance (10%), Problem sets (10%), Midterm exam (40%), Final exam (40%).

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 tentative schedule may be subject to change at the instructor's discretion.

Topic 1: Introduction

Part I. Ordinary Least Squares and Agnostic Regression

Part II. Introduction to Causality and Research Design

Part III. Cautionary Notes

Topic 2: Selection on Observables Designs

Part I. Regression Adjustment

Part II. Nonparametric Regression

Part III. Matching, Dimensionality Reduction, and the Propensity Score

Part IV. Cautionary Notes

Topic 3: Selection on Unobservables Designs

Part I. Fixed Effects and Random Effects Models

Part II. Differences-in-Differences and Case Study with Synthetic Controls

Part III. Instrumental Variables

Part IV. Regression Discontinuity Designs

Topic 4: The Problem of Statistical Inference

Part I. Panel Data and Clustering

Part II. Randomization and Inference

Part III. The Bootstrap

Topic 5: Big Data

Part I. Overview

Part II. Working with Big Data

4. Miscellaneous

TBA.