EC 575 Applied Advanced Econometrics Fall 2023 **Tentative** Syllabus

Instructor: Riju Joshi Time and Location: Tuesdays and Thursdays, 2:00 pm-3:50 pm FAB 49 Contact: <u>email</u> Office 450-K Urban Center Building Zoom Office Hours: Monday and Wednesdays, 11:00 am to 12:00 pm, <u>youcanbookme</u>

Overview and Objectives

This course covers advanced topics in applied econometrics with emphasis on program evaluation methods. We study about theoretical foundations of widely applied advanced econometric methods. We will cover discrete choice models, treatment effects, sample selection models. Stata is used throughout the course.

Prerequisites

The prerequisites for this course are EC 570 and EC 571.

Recommended Texts

- Angrist and Pischke (2009). Mostly Harmless Econometrics
- J. M. Wooldridge, Econometric Analysis of Cross Section and Panel Data, 2nd ed., The MIP Press, 2010.
- W. H. Greene, Econometric Analysis, 7th ed., Pearson Education, 2012
- Cunningham, Scott. "Causal Inference." The Mixtape 1 (2020). online version
- Angrist, Joshua D., and Jorn-Steffen Pischke. Mastering'metrics: The path from cause to effect. Princeton university press, 2014.

Tentative Course Topics

Lecture notes will be uploaded and available for download during class in progress.

- Introduction to IPUMS
- Quantile Regression
- Regression Discontinuity Designs
- Causal Inference Methods
 - Regression Adjustment
 - Inverse probability weights
 - Matching methods
 - Difference-in-Differences
- Event Study Designs
- Ordered response models
- Multinomial models
- Tobit models
- Sample Selection models

- Poisson Regressions
- Introduction to nonparametric methods

Course grade

- Homework: 30%
- Midterm (details will be announced later.): 35%
- Replication Project on IPUMS data: 35 percent (Please refer to the Replication Project module for details)
 - Class Presentation: Last weeks of term: 20 percent
 - Paper Submission: Due date: 15 percent

Work Load

The material can be difficult and the workload substantial, particularly for people who find math courses challenging. Mastering the material covered in this course requires a significant amount of work outside of class. However, your payoff for all this work is a set of quantitative and computer skills tools that are extremely useful for designing empirical work with nonexperimental data.

Stata

Stata is mandatory for this course. One central goal of this course is to provide the students with the knowledge to use and correctly interpret the output of a statistical software package Stata. It is a user friendly statistical package that allow you to conduct the analysis without prior programing experience. The Economics Department has a departmental computer lab with Stata equipped computers. Throughout the quarter, I will be holding Stata sessions during the class. Homeworks will have computer exercises that would require Stata. I would recommend purchasing Stata/IC which currently cost \$75 for a six-month student license. Other statistical packages are not permitted (no exceptions).

Homework Assignments

There will be approximately 5-6 homework assignments. The homework assignments are designed to help you better understand the course material, give you practice with analytical problems, and help prepare you for exams. Note that some of the material that we cover in class (and that is eligible to appear on exams) may not be reviewed in homework exercises. While collaboration on the homework assignments is permitted, each student must turn in his/her own homework assignment, written in his/her own words (no direct copies or photocopies allowed). Assignments must be uploaded on CANVAS. Please name all your files as lastname firstname. Each homework will consist of two parts: one written answers and one stata portion.

1. Written answers: You can type your answers and might want to use Microsoft equation editor or LaTeX. If you prefer to handwrite your answers, please upload them on CANVAS preferably in a .pdf format. I recommend taking photos from your phone and using the free app CamScanner to convert them into pdf files.

However, you can also upload pictures of your homework. When uploading the scanned copies, please make sure that the uploaded files are clear and legible for grading. Please save the paper-copy of your homework. If the TA is not able to read your uploaded file for some reason, they might ask you to re-upload your homework. Full credit will only be given to properly written answers that are supported by step-by-step calculations.

2. **Stata Answers**: The lab portion of the homework is to be completed in Stata and is to be submitted in a Word file. Students are required to type their answers into a word processing document (provided separately). Insert ONLY the relevant part of your Stata log file into your document, and clearly explain how you use your Stata output answers the question. Copying and pasting your log file into the word document without an explanation will NOT be considered a complete answer and will not receive full credit. Students will also submit the log files for the Stata part of their homework. Please use to answerFormattoStataQuestions.doc file as a guide to how to answer the Stata

questions.

3. No email submissions are allowed. If an assignment is turned in within 24 hours after the due date, it will automatically lose 50 per cent of the grade. No credit is given to homework assignments handed in more than 24 hours late.

Exams

Exams will be held live on Zoom during the class times. If you have a significant reason that you believe would justify rescheduling an exam, you must contact me as soon as possible. Significant reasons that can be anticipated (e.g. any schedule conflicts with final exams, required participation in University sponsored activities, conferences, etc.) must be given to me at least two weeks before the exam. For reasons that cannot be anticipated, see me immediately to make appropriate arrangements. Generally, if

circumstances warrant it, makeup exams will only be provided before the regularly scheduled exam. However, the resolution of any conflicts will be handled on a case-by-case basis.

Econometrics Research Project Proposal (with an emphasis on critical literature review)

You must write an empirical project proposal with a detailed critical literature review section. Your proposal must addresses the following key things:

- 1. The nature of the empirical question: You proposal must clearly introduce the reader to the causal question that you are exploring. You must explain the motivation for your research question, for example, why is your topic interesting, what are the key things that you expect to find.
- 2. Background and critical literature review: This is a very important section of the proposal. You must write a critical analysis of the literature on your research question. You must review at least five peer-reviewed, scholarly articles. Please see below for more details on the critical literature review.

3. Thesis and Methodology: Point the way forward for further research and/or place one's original work (in the case of theses or dissertations) in the context of existing literature. You need to explain what your paper aims to do. In addition, you must explain how you are going to address the topic. This should include what data you plan to use. You must describe the data in good details and why you would want to use the dataset for your project. You are welcomed (but not required) to include some data exploration, some preliminary analysis.

Critical literature Review

A critical literature review surveys scholarly articles, books and other sources (e.g. dissertations, conference proceedings) relevant to a particular issue, area of research, or theory, providing a description, summary, and critical evaluation of each work. The purpose of a Literature Review is to offer a critical overview of significant literature published on a topic. Critical Literature reviews should comprise the following elements: an overview of the subject, issue or theory under consideration, along with the objectives of the literature review; division of works under review into categories (e.g. those in support of a particular position, those against, and those offering alternative theses entirely); explanation of how each work is similar to and how it varies from the others; conclusions as to which pieces are best considered in their argument, are most convincing of their opinions, and make the greatest contribution to the understanding and development of their area of research. Useful guidelines in reading journal articles for your literature review are:

- Are the author's arguments supported by evidence (e.g. primary historical material, case studies, narratives, statistics, recent scientific findings)?
- Is contrary data considered or is certain pertinent information ignored to prove the author's point?
- Which of the author's theses are most/least convincing?
- Are the author's arguments and conclusions convincing? Does the work ultimately contribute in any significant way to an understanding of the subject?

Useful guidelines in writing your critical literature review are

- . Place each work in the context of its contribution to the understanding of the subject under review
- Describe the relationship of each work to the others under consideration
- Identify new ways to interpret, and shed light on any gaps in, previous research
- Resolve conflicts amongst seemingly contradictory previous studies
- Identify areas of prior scholarship to prevent duplication of effort

For assistance in writing a course project or paper, please check out the writing resources and workshops at PSU Writing Center.

Email Etiquette

Unprofessionally written emails with vague questions will not be responded. Emails lacking Student's name and class name will not be responded. Please be concise while stating your question, omitting excuses and/or excessive details. Also, please be polite. Please follow the following email template for reference:

Dear Dr. Joshi (or Riju),

My name is (your name) and I am in your (class name)

(body)

Thank you,

Student name

Grade Negotiations

All grades are final and no grade negotiations will be entertained. No incomplete will be awarded.

Affirmative Action

Portland State University supports equal opportunity for all, regardless of age, color, disability, marital status, national origin, race, religion or creed, sex or gender, sexual or gender identity, sexual orientation, veteran status, or any other basis in law.

Disability Resources at PSU

Students with accommodations approved through the Disability Resource Center are responsible for contacting the faculty member prior to, or during, the first week of term to discuss any accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval should contact the DRC immediately.

Academic Honesty

Academic honesty is expected and required of students enrolled in this course. Suspected academic dishonesty in this course will be handled according to the procedures set out in the Student Code of Conduct. This will include referring students to the Dean if it appears that students are using the work of others to gain credit in this class.

Course Materials:

All course materials presented during this course (lectures, notes, homework assignments, answer keys, exams, etc.) are the copyrighted property of the course instructor and subject to the following conditions of use:

- Students may not record lectures/classroom activities or take any pictures/make reproductions of lecture slides unless prior written consent has been obtained by the instructor.
- Students may not share or post recordings or any other course materials online or distribute them in any way (including to students enrolled in the course and anyone not enrolled in the course).
- Any student violating these conditions may face academic disciplinary sanctions.