ECON 742: Empirical Microeconomics

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Office Hours: Tu and Th: 4:00 pm - 5:00 pm (LEA 532)

Lecture Place and Time: LEA 808 on Tu and Th 11:35 am - 12:55 pm

Description:

ECON 742 is a seminar course on methods that are commonly used in various fields of Economics such as Labor, Development, Growth, Health, Industrial Organization, etc. In other words, the course is about Applied Microeconometrics. The methods to be discussed in this class can in general be applied to cases where you have observations for a single period or multiple periods on a large number of units (individuals, firms, countries, etc.). We will focus mainly on the methods, i.e., what is the method, why it works, how it works. The discussions will be superficial (i.e., no proofs) in some sense because the primary purpose of this course is to get you familiar with a variety of methods.

What we will not discuss are the following: (1) the theoretical foundation for all these methods, because it is not relevant for the target students; (2) novel applications, because you can learn it better from other field-specific courses.

Prerequisite:

ECON 662 or permission of instructor. Familiarity with Stata will be very helpful.

Grading Policy:

The final grade will be based on:

(1) **Homework assignments: 10%**
(2) **Project: 90%**

The first part of the course will be **assignment** intensive. Assignments are posted below. Feel free to work as a group for these assignments but turn in your own answers.

I would expect all the students to write a paper on any topic of their choice. In this paper you would apply the methods learnt in this class to real life data. I would expect you to come up with a research question of your choice, think of an appropriate dataset, and then apply these methods. You can expect my help with the last part. You will present the progress of your project twice during the semester, and will hand in the final paper one week after the last day of lectures. The first presentation (10 minutes) should discuss the key idea behind your project --- why is it important, what has already been done, what you wish to add to the topic, etc. --- and some basic data work to ensure the feasibility of the project. You will submit a first draft immediately after the first presentation. The second presentation

(40 minutes) should be the formal presentation of the project similar to the regular presentations that you see in our seminar series.

Required reading:

I will upload my lecture notes **(LN)** after each lecture. This will cover the materials that, in my opinion, are absolutely essential for any student working on applied micro. Since almost no student will work on econometric theory, I am not going to assign many theoretical papers in econometrics for reading. However, my lecture notes will work out (heuristically, and not very rigorously) the key steps of the fundamental results that come from (a subset of) such theoretical papers.

In addition, you must read from the following textbooks by Cameron and Trivedi and also Wooldridge (see below). In fact, many of the homework assignments will be based on these textbooks. These books are a bit outdated for certain topics. My lecture notes will try to fill that gap.

"Microeconometrics" by Colin Cameron and Pravin Trivedi **(CT)**. I strongly recommend that you solve all the exercises in this book. Your homework assignments are based on these exercise. Online resources for the book are available from the website http://cameron.econ.ucdavis.edu/mmabook/mma.html.

"Microeconometrics Using STATA" by Colin Cameron and Pravin Trivedi is a useful supplement.

"Econometric Analysis of Cross Section and Panel Data" by Jeffrey Wooldridge **(W)** is also an excellent reference. I will assign certain homework problems from this book as well. In particular, the panel data version for each nonlinear model is covered quite extensively in W.

In addition, you will find the lecture notes by Guido Imbens and Jeffrey Wooldridge from their popular lecture series "What is New in Econometrics" very useful. These notes are highly recommended.

Course Outline:

Date	Topics and readings (LN is always required)	Assignments
Sep 19 and 21	Review of maximum likelihood	Feel free to discuss your ideas for the project with me or your friends.
Sep 26 and 28	**CT Ch 14:** Binary Outcome Models **W Ch 15:** Binary Response Models (15.1-15.7)	All exercises from LN CT: 14-3, 14-4, 14-5, 14-6 W: 15.5, 15.14

Oct 3 and 5	Basics of nonparametric estimation to be able to better appreciate the nonparametric and semiparametric methods to follow. Additionally, you can consult **Ch 9 (CT)**. For those with more interest in the theory, please consult **Ch 2-3** of **Pagan and Ullah**.	
Oct 17 and 19	**CT Ch 15:** Multinomial Models **W Ch 16:** Multinomial and Ordered Response Models	All exercises from LN CT: 15-2, 15-3, 15-4 W: 16.3
Oct 24 and 26	**CT Ch 16:** Tobit & Selection Models **W Ch 17:** Corner Solution Responses (17.1-17.7) **W Ch 19:** Censored Data, Sample Selection, and Attrition (19.1 – 19.8)	All exercises from LN CT: 16-2, 16-3, 16-5 W: 17.6, 17.9, 19.14, 19.16
Oct 31 and Nov 2	**CT Ch 21:** Linear Panel Models: Basics **W Ch 10:** Basic Linear Unobserved Effects Panel Data Models **CT Ch 22:** Linear Panel Models: Extensions **W Ch 11:** More Topics in Linear Unobserved Effects Models	All exercises from LN CT: 21-3, 21-4 W: 10.13, 10.14 CT: 22-2, 22-5 W: 11.3, 11.9
Nov 7 and 9	**1st Presentation of your project** In the remaining time I will start with a gentle introduction of the treatment effect literature by fixing the terminologies, assumptions, etc.	
Nov 14 and 16	**Ch 25:** Treatment Evaluation **W: Ch 21** Estimating Average Treatment Effects Try to read: 1.Handbook chapters by Heckman and Vytlacil (2007). The focus will be to think about all the	The literature for this topic is vast. The textbooks are not enough. Since it is easy to get lost in this vast literature, I think it will be useful for you to make a summary of the lecture notes and the other

	measures of treatment effects in terms of the so-called MTE. 2. The ReStat 2004 paper by Imbens is a good summary of methods, so is the JEL paper (2009?) by Imbens and Wooldridge. More recent developments are related to machine learning and I hope to touch on that on Mar 24	assigned readings. This way you will have a good documentation that you can refer back to in the future.
Nov 21 and 23	1. Regression discontinuity 2. Difference and difference	
Nov 28 and 30	Application of Machine learning in treatment effect estimation (I don't know much, but am trying to learn it myself…let us do that together)	
Dec 5 (1/2 lecture)	Clustering and stratification **1 final presentation of your project**	
5 makeup lectures	**Remaining 10 final presentations of your project**	