

ECON 830: ADVANCED ECONOMETRIC METHODS AND APPLICATIONS

Spring 2018

Instructor: Sepideh Modrek	Time: Thurs. 16:10 - 18:55
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Course Objective: In this course we will develop both theory and application of cross sectional and panel econometric models. The primary focus will be on applied work with a focus on implementation of econometric methods, practical issues that arise while conducting econometric research, and interpretation of results.

Office Hours: Monday 15:00-16:00 or by appointment.

Textbooks: I will keep an extra copy of the textbook at the library for check out. Downloadable ebooks are also available.

Required:

- Jeffrey Wooldridge, *Introductory Econometrics: A Modern Approach*, Either 5th or 6th Edition.
- Joshua D. Angrist & Jorn-Steffen Pischke (A&P), *Mostly Harmless Econometrics: An Empiricist's Companion* OR
- Joshua D. Angrist & Jorn-Steffen Pischke (A&P), *Mastering Metrics*
- Articles listed under each section which will be posted on iLearn

Objectives: This course is primarily designed for graduate students who want to conduct empirical work. The main focus will be on practical issues arising in research, implementing procedures and interpreting output.

Prerequisites: Econ 731 and working knowledge of STATA.

Grading Policy: Lab and Homework Assignments (40%), Class Paper (40%) and Presentation (10%), Participation (10%).

Course Details:

The class will have a lecture section, a discussion of the readings when assigned and then a workshop/lab section. Lecture notes will be posted on iLearn. I will also post homework/lab assignments and all the readings there as well. All students should make sure they are included on the iLearn roster for this class.

You should attend all classes. This is the first step to ensure that you are able to stay on top of the course material. If for any unavoidable reason, you miss a class, you must make sure review the posted class notes before the next class. I am happy to clarify concepts in office hours but not to re-teach the material covered in class. Active class participation is highly encouraged.

Homework:

There will be four homework/lab assignments due. Each will be worth 10% of your grade. All homework/lab datasets will be posted on iLearn. Treat these like take home exams. They constitute 40% of your grade!

Class Project and Presentation:

Empirical Paper: The paper will be based on a topic of your choice, using data of your choice, and should apply at least two of the analyses/techniques covered in the class. You should treat the paper as

the exam for this course as it will demonstrate an ability to apply the tools we learn. The paper should be formatted like a journal article and have several components including 1) Targeted literature review meant to set up the hypothesis you will explore, 2) Details on data source and methods to be used in the analyses, 3) Summary tables and graphs– I require a visualization of some sort, 4) Analyses meant to test main hypotheses proposed, 5) Interpretation of results, 6) Detailed discussion of the link between hypothesis and analysis, limitations of the analysis (measurement, omitted variables, selection, external validity, etc), 7) All Stata code and output attached (with detailed notes on how they link to the paper). The heart of this assignment (excluding references and code) should be about 10-12 pages.

Paper Presentation: I will also ask you to create a 15-minute presentation of your analyses to present to the entire class during the final two meetings (Lecture 15- Final Exam Period). I will use the format of a conference presentation. Please prepare no more than 10 slides and make sure that your presentation is no longer than 15 minutes. All presenters will be stopped at the 15-minute mark to allow for 5 minutes of questions. All presentations must have one or more visualization.

You must meet with me to discuss your project in office hours. Please bring two concrete ideas to discuss. I must approve all topics by 3/12/2018. Once I approve your idea, I'll ask you write a 1 page description of the project which will be due by 4/2/2018. This is not graded and meant to help you with your paper and presentation. I will return this to you with comments.

You are allowed to work on the paper with one partner, but you will be required to look at multiple outcomes in your analyses, and I expect you to each still do an individual presentation. You will be held to a higher standard if you chose to work with a partner.

Tentative Course Outline:

- Lecture 1 (1/25): Introduction and practicalities of empirical work
 - Data Management
 - Visualization
 - Descriptive and exploratory practices
- Lecture 2 (2/1): Regression Review & Regression as the CEF
 - Agnostic regression vs. Causal inference
 - Overview Study Design: Selection on Observables
 - P & A : Chapter 1-2 [Posted on iLearn]
- Lecture 3 (2/8): Maximum Likelihood and Limited Dependent Variables- Logit & Probit
 - Wooldridge Chapters 17.1-17.2
 - Lab 1 due
- Lecture 4 (2/15): Discrete and Continuous Time Analysis- Survival Analysis
 - Virnig et al. Survival Analysis Using Medicare Data: Example and Methods
- Lecture 5-6 (2/22-3/1): Matching Estimators- Propensity Score
 - P &A Chapter 3.3
 - Imbens, G. Matching Methods in Practice: Three Examples
 - Rajeev H. Dehejia and Sadek Wahba. Causal Effects in Nonexperimental Studies: Reevaluating the Evaluation of Training Programs.JASA, 1999.
- Lecture 7-8 (3/8-3/15): Panel Data Analysis

- Overview Study Design- Selection on Unobservable Designs
- Wooldridge Chapters 13-14
- Lab 2 due 2/26
- Card & Kruger, Minimum Wage and Employment: A Case Study of Fast Food Workers in New Jersey and Pennsylvania. AER, 1994.
- Lecture 9-10 (3/29-4/5): Instrumental Variables
 - Wooldridge Chapters 15
 - Angrist, Joshua. Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence from Social Security Administrative Records. American Economic Review, 1990, 80, 313-336.
 - Lab 3 due 3/26
- Lecture 11-12 (4/12-4/19): Regression Discontinuity
 - Almond, Douglas. Impacts of classifying New York City students as overweight. PNAS, 2016.
 - Imbens, G. & Lemiex, T. REGRESSION DISCONTINUITY DESIGNS: A GUIDE TO PRACTICE
 - Lee, D. & Lemiex, T. Regression Discontinuity Designs in Economics. Journal of Economic Literature, 2010.
- Lecture 13 (4/26): Class Workshop
 - Lab 4 due 5/3
- Lecture 14 (5/3): Machine Learning Tools for Feature Selection- Lasso Regression
 - Mullainathan & Spiess. Machine learning: an applied econometric approach. Journal of Economic Perspectives, 2017.
 - Einav & Levin. Economics in the age of big data. Science, 2014.
- Lecture 15 (5/10): Student Presentations
- Final Exam Period (5/17): Student Presentations

Statement on Cheating and Plagiarism: Lack of knowledge of the academic honesty policy is not a reasonable explanation for a violation.

There are likely many instances where collaboration will be encouraged, but NOT academic dishonesty. I abide by standard university policies in this regard who offer the following wording:

Cheating is the actual or attempted practice of fraudulent or deceptive acts for the purpose of improving ones grade or obtaining course credit; such acts also include assisting another student to do so. Typically, such acts occur in relation to examinations. However, it is the intent of this definition that the term cheating not be limited to examination situations only, but that it include any and all actions by a student that are intended to gain an unearned academic advantage by fraudulent or deceptive means. Plagiarism is a specific form of cheating which consists of the misuse of the published and/or unpublished works of others by misrepresenting the material (i.e., their intellectual property) so used as ones own work. Penalties for cheating and plagiarism range from 0 or F on a particular assignment, through an F for the course, to expulsion from the university. For more information on the Universitys policy regarding cheating and plagiarism, refer to the University Catalog (Policies and Regulations).

Statement on Services for Students with Disabilities: Americans with Disabilities Act (ADA) Accommodations: The University is committed to providing reasonable academic accommodations to students

with disabilities. The Disability Programs and Resources Center provides university academic support services and specialized assistance to students with disabilities. Individuals with physical, perceptual, or learning disabilities as addressed by the Americans with Disabilities Act should contact Services for Students with Disabilities for information regarding accommodations. Please notify your instructor so that reasonable effort can be made to accommodate you. If you expect Accommodation through the Act, you must make a formal request through Disability Programs & Resources Center in SSB 110, Telephone 338-2472.

Student Disclosures of Sexual Violence: SF State fosters a campus free of sexual violence including sexual harassment, domestic violence, dating violence, stalking, and/or any form of sex or gender discrimination. If you disclose a personal experience as an SF State student, the course instructor is required to notify the Dean of Students.

To disclose any such violence confidentially, contact:

- The SAFE Place - (415) 338-2208: http://www.sfsu.edu/~safe_plc
- Counseling and Psychological Services Center - (415) 338-2208: <http://psyservs.sfsu.edu>
- For more information on your rights and available resources: <http://titleix.sfsu.edu>