Quantitative Research Methods in Public Administration

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Spring 2019. CPACS 124.
Wednesdays 5:30pm–8:10pm.

Office Hours: By appointment.
Email to schedule an appointment.

COURSE OVERVIEW

This course is an introduction to the theory and application of linear modeling to economic and public policy problems. The course focuses on the techniques used in empirical research with a particular focus on intuitive understanding. Problem sets will introduce real world applications and teach you the fundamentals of statistical programming in Stata. No prior knowledge of computer programming in necessary.

The focus of this course will be to provide you with the theoretical and practical skills necessary to conduct your own empirical research. You are encouraged to work in groups on the problem sets, however, **you must turn in your own homework and write up the answers on your own**.

All students are responsible for maintaining the highest standards of honesty and integrity in every phase of their academic careers. The penalties for academic dishonesty are severe and ignorance is not an acceptable defense.

COURSE OBJECTIVES

1. The fundamental purpose of this course is to develop the skills necessary to conduct high-quality empirical social science research. Students must be able to understand both the theory and application of statistical methods in the social sciences.

2. Theory: students will be familiar with the statistical assumptions underlying the use of multivariate regression techniques, under what conditions these assumptions are violated, the implications for your research of violating these assumptions, and alternative estimators that help correct for these violations.

3. Practice: students must be able to demonstrate a working knowledge of how to diagnose and test empirical models. Additionally, students must aster the techniques for correcting models that violate statistical assumptions.

TEXTS & MATERIALS

REQUIRED

Wooldridge, Jeffrey M. 2016. *Introductory Econometrics: A Modern Approach* 6e. Cengage.
ISBN: 978-1305270107. (*Note*: this isn't the most recent version. We'll be using 6e instead of 7e this semester.)

Angrist, Joshua D. and Jörn-Steffen Pischke. 2014. *Mastering 'Metrics: The Path from Cause to Effect*
Princeton University Press. ISBN: 978-0691152844.

Stata/IC version 12 or later (current version is 15)
It is required that you have ready access to Stata. It is available in our lab and if you wish to purchase a copy for use on your own computer, you can do so through Stata's website ($198 for Stata/IC 15, perpetual license).

RECOMMENDED

Baum, Christopher F. 2006. *An Introduction to Modern Econometrics Using Stata*. Stata Press.
ISBN: 978-1597180139. (**highly recommended**)

Hagle, Timothy M. 1995. *Basic Math for Social Scientists: Concepts* Sage Publications.
ISBN: 978-0803958753.

Gill, Jeff. 2006. *Essential Mathematics for Political and Social Research* Cambridge University Press.
ISBN: 978-0521684033.

EVALUATION

PROBLEM SETS – 60%

This course takes a "hands-on" approach to learning how to use econometric models in implementing well-crafted and theoretically driven research designs. The ultimate aim of the course is to prepare you to publish in top public administration and policy journals, where expectations of analytical rigor have increased significantly over the past several years. A series of challenging problem sets will require you to:

- Theoretically build and empirically estimate and diagnose models using Stata;

- Interpret and critically evaluate findings in empirical work that appears in public administration and policy journals; and

- Respond in a clear and cogent fashion to mock journal reviews in which your empirical approach and techniques are challenged.

You are strongly encouraged to collaborate on problem sets.

EMPIRICAL PAPER – 40%

A major requirement for the course is to complete an empirical paper in which you: 1) implement one of the methods **covered in this course**; 2) discuss in detail potential threats to validity; and 3) offer a thorough analysis of potential violations of the assumptions underlying your model. The paper should highlight your

empirical work; the literature review and discussion of theory should be shorter than in a paper submitted for publication. However, you must provide sufficient theoretical justification for the type of model you estimate as well as the variables incorporated into it. More information about the exact requirements and styling will be made available in class.

*Paper topic proposals are due to me by **January 30th** and you are required to meet with me at some point the following week to discuss your topic (contact me directly to schedule your appointment). Your empirical paper is due **April 24th** to me and your discussant, and you will present it on **May 1st**.* You should present your paper as you would at a professional conference or in the context of a "job talk." Time allotted will depend on the number of students enrolled in the course. Please note that you will be evaluated on the basis of the *quality* and *professionalism* of your paper, your presentation, and your responses to questions. If you are unfamiliar with the professional standards of presenting, reviewing, and critiquing an academic paper, please read Daniel Hamermesh's The Young Economists Guide to Professional Etiquette.

POLICIES

- The course website is primarily Canvas; however, all data and code will be housed on GitHub.

- Late assignment will not be accepted without prior arrangement. A penalty will be assessed on all late assignments.

- You may appeal any grade by paper-clipping a typewritten, hard-copy memo to the original assignment. *Do not write on the original assignment.* In the appeal: 1) Specify the section(s) or question(s) to which you are referring; and 2) Provide evidence from the assigned reading and lecture material that your original response is worthy of a higher grade. Please note that your grade may go up or down or stand as-is as a result of the appeal.

- If you have or believe you have a disability that may impede your learning, please contact the Disability Services Office. I will make every effort to accommodate you in accordance with UNO policy, procedures, and recommendations. Additional information can be found here.

- There must be a **clear respect for diversity** maintained in the class. This includes respect for people related to gender, sexual orientation, religious identity, disability, age, socio-economic status, ethnicity, race, culture and other differences. All of us have something to offer, and together, we can cultivate a classroom environment where individuals of varying opinions, experiences, and backgrounds are able to learn in a supportive and inclusive setting.

ACADEMIC HONESTY

All students at the UNO are expected to conduct their academic affairs in an honest and responsible manner. Any student found guilty of dishonesty in academic work shall be subject to disciplinary actions. Acts of academic dishonesty include, but are not limited to:

- plagiarism, i.e., the intentional appropriation of the work, be it ideas or phrasing of words, of another without crediting the source;

- cheating, i.e, unauthorized collaboration or use of external information during examinations; assisting fellow students in committing an act of cheating;

- falsely obtaining, distributing, using or receiving test materials or academic research materials; submitting examinations, themes, reports, drawings, laboratory notes, research papers or other work as one's own when such work has been prepared by another person or copied from another person (by placing his/her own name on a paper, the student is certifying that it is his/her own work); or

- improperly altering and/or inducing another to improperly alter any academic record.

Additionally, graduate students are more likely to assume roles as active scholars. With these roles come added responsibilities for academic honesty. For such individuals academic honesty requires an active pursuit of truth not just an avoidance of falsehood. This pursuit includes but is not limited to:

- providing a full and complete representation of any scholarly find, be it experimental data or information retrieved from archives;

- taking care that the resources of the University (e.g., library materials, computer, or laboratory equipment) are used for their intended academic purposes and they are used in a manner that minimizes the likelihood of damage or unnecessary wear;

- assuring that one's co-workers are given due credit for their contributions to any scholarly endeavor; respecting a diversity of opinion and defending one's colleagues as well as one's own academic freedom; respecting the rights of other students who may come under the tutelage of the graduate student and being fair

- and impartial in grading and other forms of evaluation; and seeking permission from an instructor when submitting to that instructor work which the student has submitted for a course taken in the past or intends to submit for another course currently being taken.

In cases of alleged academic dishonesty, the instructor shall attempt to discuss the matter with the student and explain the sanction(s) which he/she plans to impose. In the event that the student challenges the allegation of academic dishonesty, or is not satisfied with the sanctions(s) imposed by the instructor, the student may file an appeal according to the approved appeal policies of the University of Nebraska Graduate College.

COURSE OUTLINE

Week 01, 01/07 - 01/11:   Math refresher and introduction

- Wooldridge, Ch. 1.
- Angrist and Pischke, Intro.
- Angrist and Pischke, *Mostly Harmless Econometrics*, Ch 1.
- DiNardo, John. 2007. Interesting Questions in Freakonomics. *Journal of Economic Literature* 45 (4): 973–1000.

Week 02, 01/14 - 01/18:   Simple regression model

- Wooldridge, Ch. 2.

Week 03, 01/21 - 01/25:   Multiple regression: Estimation

- Wooldridge, Ch. 3.
- Angrist and Pischke, Ch. 2.

Week 04, 01/28 - 02/01:   Multiple regression: Inference

- Wooldridge, Ch. 4.
- *Paper proposals due*

Week 05, 02/04 - 02/08:   Dummy variables and other issues

- Wooldridge, Ch. 6.
- Wooldridge, Ch. 7.
- Brambor, Thomas, William Roberts Clark, and Matt Golder. 2006. Understanding Interaction Models: Improving Empirical Analyses. *Political Analysis* 14 (1): 63–82.
- Braumoeller, Bear F. 2004. Hypothesis Testing and Multiplicative Interaction Terms. *International Organization* 58 (4): 807–820.

Week 06, 02/11 - 02/15:   Heteroskedasticity

- Wooldridge, Ch. 8.

Week 07, 02/18 - 02/22:   Measurement error

- Wooldridge, Ch. 9.
- Angrist and Pischke, Ch. 6, Appendix.

Week 08, 02/25 - 03/01:   Difference-in-differences

- Wooldridge, Ch. 13.2.
- Angrist and Pischke, Ch. 5.

Week 09, 03/04 - 03/08:   Time Series

- Wooldridge, Ch. 10.
- Wooldridge, Ch. 11.
- Wooldridge, Ch. 12.

Week 10, 03/11 - 03/15:   Time Series

- Wooldridge, Ch. 10.
- Wooldridge, Ch. 11.
- Wooldridge, Ch. 12.

Week 11, 03/18 - 03/22:   *No Class – Spring Break*

Week 12, 03/25 - 03/29:   Introduction to Panel Methods

- Wooldridge, Ch. 13.
- Wooldridge, Ch. 14.

Week 13, 04/01 - 04/05:   Advanced Panel Methods

- Wooldridge, Ch. 13.
- Wooldridge, Ch. 14.

Week 14, 04/08 - 04/12:   Instrumental variables

- Wooldridge, Ch. 15.
- Angrist and Pischke, Ch. 3.

Week 15, 04/15 - 04/19:   Regression discontinuity

- Angrist and Pischke, Ch. 4.

Week 16, 04/22 - 04/26:   *No Class*

- *Papers due to me and your discussant.*

Week 17, 04/29 - 05/03:   *Paper presentations*