Tuesday and Friday, 9:50-11:10 am, Scott Hall 201
Professor Hilary Sigman (hsigman@rutgers.edu), 848-932-8667
Office Hours: NJ Hall 422, Tuesday and Friday 11:15-noon or by appointment.

Course Objectives: This course aims to help students become researchers in empirical microeconomics. It covers modern methods in econometrics for cross-sectional and panel data. It emphasizes the application of these methods in practice and strategies for designing and implementing research questions in light of the available econometric techniques. We will analyze scholarly research employing these methods from a wide variety of fields within microeconomics.

Learning Goals: Prepare students to conduct econometric research on topics in applied microeconomics; build ability to evaluate econometric methods in empirical papers; develop familiarity with the statistical programming language Stata and with other research resources.

Learning Assessment:

- **Stata exercises (10%).** A few exercises during the term. Credit is mainly for completing the exercise in a timely manner. Students will have at least 2 weeks’ notice before the assignments’ due dates.

- **Paper discussion (15%).** Choose a paper (ideally a working paper) for which you will act as a discussant. Pick something in your area of interest; it has to have some econometric analysis, but not necessarily sophisticated methods. Please propose a paper for this purpose by February 2. We’ll try to schedule you at a time appropriate for the methods in your paper. You will give a 10-20 minute presentation to the class (summarizing the paper and offering a critique of its methods) and submit your presentation file.

- **Empirical methods paper and presentation (40%).** Write a 7-10 page paper discussing the econometric issues for addressing some particular research question in empirical microeconomics. The paper should state the research question, identify data that could be used for analysis, describe two alternative econometric methods that might be applied, and discuss the advantages and disadvantages of these methods. This paper must be original and distinct to this course. You may work on a topic related to your second-year paper proposal or proposals for other courses, but please clear any overlap with me first. Your paper for this course should be different from those submitted to other courses and should focus on methodological issues.

A tentative title and abstract are due by March 11 (before spring break). You will present this work during the last few classes; the papers themselves are due at the end of the semester.
• **Final exam (35%).** Date to be arranged.

In addition, regular attendance in class is expected; up to 10% of credit may be deducted for markedly poor attendance.

**Website:** The course has a [Sakai](https://sakai.rutgers.edu) site that has presentations, assignments, and other course materials. Where possible, please use the Sakai Dropbox to submit assignments.

**Texts:**


**Other recommended sources for the entire course:**


**Readings:** For the most part, we will use textbooks for reading about methodology. Most of the articles are applications of the methods or at least methodological articles that emphasize applications. Links to the journal readings can be found through [our class page on RefShare](http://tinyurl.com/komq3u). You will need to be on campus or authenticated through the Rutgers Library proxy to click through for full text.

**Software:** We will do some exercises in Stata. Stata is available on networked computers in the department and through apps.rutgers.edu. If you are a Rutgers employee, you may also be able to download it for free from the [RU Software Portal](https://software.rutgers.edu).

**Empirical Microeconomics Workshop:** Friday, 2-3:30 pm, Simon Library. Attending this workshop is strongly recommended. Nothing will help you develop as an empirical researcher as much as
participating in a discussion of current research. The schedule is available under the Workshops link on the Economics Department website.

**Academic integrity:** Students must follow the Rutgers Academic Integrity Policy. In particular, students must:

- properly acknowledge and cite all use of the ideas, results, or words of others.
- properly acknowledge all contributors to a given piece of work.

Your words must be your own. Direct quotation is not generally used in economics articles; however, if you do use any direct quotation, it must be in quotation marks with its source properly cited. Changing a small number of words in a passage does not mean the passage is not plagiarized.

If you have questions about proper citation or other matters, ask those questions before submitting work. Ignorance is not a defense. All violations of the policy will be referred to the proper authorities and may cause students to fall out of good standing or be dismissed from the program.
Course outline and readings
Rutgers Economics 509: Applied Econometrics for Microeconomics
Spring 2016
Prof. Sigman

I. Research design

Angrist and Pischke (A&P), chapters 1 and 2

Wooldridge, chapter 2


II. Some topics in linear models

Wooldridge, ch 4

Angrist and Pischke, ch 3 (to p. 68)

a. Choice of functional form

Wooldridge, Introductory Econometrics, Sections 6.2, 6.4 and appendix A.4

Wooldridge, pp. 137-8

b. Dummy variables

Angrist and Pischke, pp. 48-51

c. Omitted variable bias and proxy variables

Wooldridge, pp. 65-72

III. Issues with standard errors

a. Delta method

b. Clustered errors
Wooldridge pp. 863-66

Angrist and Pischke, pp. 308-323

Wooldridge, NBER Minicourse, Lecture 8


c. Bootstrapping

Cameron and Trivedi, Microeconometrics Using Stata, Ch. 13

Angrist and Pischke, pp. 300-308


IV. Panel data models

Wooldridge, ch 10 and pp. 866-70 (comparison with clustering)

Wooldridge, NBER Minicourse Lecture 2 (2 parts)

Angrist and Pischke, ch 5


V. Difference in differences

Wooldridge, pp. 146-151


App. Econometrics for Micro (Econ 509), p. 5
VI. Regression Discontinuity

Wooldridge, pp. 954-59

Angrist and Pischke, ch 6


VII. Instrumental variables and systems of equations

a. Single equation IV

Wooldridge, pp. 89-112

Angrist and Pischke, ch 4


b. Weak instruments


c. Heterogenous treatment effects and IV

Angrist and Pischke, pp. 151-161


d. Dynamic panel models

Wooldridge, pp. 371-4

e. Systems of equations

Wooldridge, Ch 9

App. Econometrics for Micro (Econ 509), p. 6
VIII. Measurement error

Wooldridge, pp. 76-82 and pp. 112-114


IX. Bivariate choice models

Wooldridge 561-582, 608-625

X. Tobit and selection models

a. Two-part latent index models

Wooldridge, pp. 667-677, 690-694

Angrist and Pischke, pp. 94-107

b. Sample selection

Wooldridge, pp. 777-808


c. Attrition

Wooldridge, pp. 827-835


d. Control function approaches


XI. Multinomial models
a. Ordered and unordered models

Wooldridge, ch 16


b. Random coefficients logit


XII. Count data and fractional response models

Wooldridge, chap 18, especially pp. 723-739, 748-753, 755-764


XIII. Duration models

Wooldridge, ch 22


XIV. Quantile regression

Wooldridge, section 12.10

Wooldridge, NBER Minicourse Lecture 14

Angrist and Pischke, ch 7


XV. Matching and propensity score methods

Wooldridge, pp. 934-936


XVI. Spatial econometrics


Application: Albers, Ando and Chen. 2008. Spatial-econometric analysis of attraction and repulsion of private conservation by public reserves, *J. Environmental Econ & Management*