

**ECON 203-1: ECONOMETRICS
Fall Semester, 2006**

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Office hours: Mondays 4:15-5:15 pm, Wednesdays 11:15am-12:15 pm and 3:30-4:30 pm, and by appointment

COURSE DESCRIPTION:

This course provides an introduction to the statistical methods economists use to test economic models and examine empirical relationships. Throughout much of this course, somewhat more emphasis will be placed on the mathematical development of the methodology, but applications of these techniques will be introduced where appropriate. Use of the computer to run the statistical software package, Stata, will be an integral part of the course and will be necessary for completing problem sets and conducting the analysis for your final paper. No prior knowledge of this software is expected, however.

PREREQUISITES:

To enroll in this course, you must have taken the following classes or their equivalent: Economics 103 (formerly QR199), Economics 101 and 102 (may be taking ECON102 concurrently), and Math 115.

COURSE MEETINGS:

The course meets on Mondays, Wednesdays, and Thursday from 9:50am to 11:00am in 129 Pendleton East. The Wednesday class meeting time will sometimes be used for an optional class meeting or additional office hours and sometimes be used for required class meetings; see detailed listing below for specifics.

TEACHING ASSISTANT AND TUTORING:

The course teaching assistant, Diana Eastman, will lead some of the Wednesday meetings. Specifically, the TA will be available for assistance with problem sets at three other class meetings, and will occasionally have drop-in TA office hours. The TA is not responsible for answering any questions outside of these Wednesday course meetings, so please do not send her email. Students who are interested in having an individual tutor should speak with me and contact the PLTC.

COURSE CONFERENCE:

You will automatically be subscribed to the course conference. Please get in the habit of checking it when you check your email. I will use the conference to make announcements and post assignments and handouts, and you can use it to ask questions of me or of your fellow students. You are responsible for anything on the course conference.

COURSE REQUIREMENTS:

1. **PROBLEM SETS.** There will be four problem sets. They will be due on **AT THE BEGINNING OF CLASS.** Problem sets are an integral part of the course. To facilitate group activity and to help each other solve computer-related problems, these problem sets should be conducted in groups of three. Since written solutions will be distributed on the due date, **NO LATE PROBLEM SETS WILL BE ACCEPTED.** Computer difficulties should be expected and factored in the time allotted to complete the exercises.

2. **RESEARCH PAPER.** The final paper assignment is to write an empirical research paper in groups of three. You **MUST** work in groups of three. In this paper, you will be required to identify a topic and generate a hypothesis to be tested, review the literature to find other research on this topic, find appropriate data to address the topic, and evaluate these data to test your hypothesis. It is imperative that work on this paper commence early in the semester to insure that all these steps can be completed in time to prepare your presentations. More specific guidelines will be handed out regarding topics and format requirements. Additionally, you will need to hand in two Paper Proposals, Summary Statistics and a Data Dictionary, and a Paper Outline. I will provide guidance on the papers via

comments on these preliminary assignments and additional office hours. I will not read drafts. Late papers will result in a penalty of one half of a grade per day and will not be accepted more than 3 days late.

4. **RESEARCH PAPER PRESENTATION.** Each group will give a 15-minute presentation of its research paper in class. **THE CLASSES IN WHICH STUDENTS GIVE PRESENTATIONS ARE MANDATORY FOR ALL ENROLLED STUDENTS.** There will be sign-in sheets. I will deduct points from your grade if you do not attend.

5. **TWO MIDTERMS.** The two midterm exams will be closed book, in-class exams. Please notify me by **September 14** about any foreseeable conflicts with the midterms; after the first week, make-ups will be allowed only for serious medical or personal problems and a note from a Class Dean will be required.

GRADING:

Grades will be based on two midterm exams (25% each), a research paper and presentation (30%), and problem sets (20%). Because each week's material builds on the previous material, knowledge of material from the first half of the course is required for the second midterm.

READING ASSIGNMENTS:

The required text for the course is Orley Ashenfelter, Phillip B. Levine, and David Zimmerman, *Statistics and Econometrics: Methods and Applications*, New York: John Wiley and Sons, Inc., 2003. I will refer to this book in the syllabus as "ALZ". The book is available at the college bookstore and will be placed on reserve at Clapp Library. In addition to the textbook, articles and book chapters listed on the syllabus are also required reading for the course. These will be made available on the course conference.

An optional text for the class is *Getting Started with Stata 5 for Windows*, College Station, TX: Stata Press. This text may come in handy when you do your problem sets or for your final paper. It provides a "nontechnical" description of the statistical software package, Stata, that we will be using for this course. I will provide basic instructions in class, but you may find another reference source advantageous. You may consider purchasing one copy for your group that you will work with for your problem sets and final paper.

CONTACTING THE PROFESSOR VIA EMAIL:

I will make every effort to respond to emails quickly; however, allow 24 hours for a response to an email. I cannot guarantee that if you email me the night before something is due, that I will be able to respond in time for it to make a difference in terms of your assignment. Do not expect responses to emails after 5pm on the day before an exam. Additionally, I encourage you to use the class conference to ask questions, as other students may have similar concerns. If you have a question about class but would like for it to appear on the course conference anonymously, please email me it to me directly. Please state that you would like it posted anonymously to the course conference.

COURSE SCHEDULE AND READINGS:

I. Introduction

Weds., Sept. 6 No class

Thurs., Sept. 7 Introduction I: Introduction to Econometrics
ALZ, Chapter 1

Mon., Sept. 11 Introduction II: Controlled Experiments
ALZ, Appendix A and Chapters 2-8 (review of Econ 103)

Bertrand, Marianne and Sendhil Mullainathan. "Are Emily and Greg More Employable Than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination." *American Economic Review*. September 2004, pp. 991-1013.

Weds., Sept. 13: *Statistics Review*

II. Simple Regression

Thurs., Sept. 14: Simple Regression I
ALZ, Chapter 9.1-9.3

Chapters 3 and 4 of Elaine McEwan and Patrick McEwan, *Making Sense of Research: What's Good, What's Not, and How to Tell the Difference*, Thousand Oaks, California: Corwin Press, 2003.

Mon., Sept. 18 Introduction to Stata
PROBLEM SET #1 DUE

Wed., Sept. 20: Simple Regression II: Estimating the Parameters
ALZ, Chapter 9.4-9.5

Thurs., Sept. 21: Simple Regression III: Assumptions of the Linear Regression Model
ALZ, Chapters 10.1-10.3, 10.7

Mon., Sept. 25: Simple Regression IV: Hypothesis Testing
ALZ, Chapters 10.4-10.5
PAPER PROPOSAL I DUE

Wed., Sept. 27: *Optional Class: Problem Set Assistance (TA)*

Thurs., Sept. 28: Simple Regression V: Goodness of Fit and the Effect of Outliers
ALZ, Chapter 10.6
PROBLEM SET #2 DUE

III. Multiple Regression

Mon., Oct. 2: Multiple Regression I: Introduction
ALZ, Chapter 11

Weds., Oct. 4 Multiple Regression II: Dummy Variables
ALZ, Chapter 12.1-12.2

Thurs., Oct. 5: Multiple Regression III: Categorical Variables and Interaction Terms
ALZ, Chapter 12.1-12.2
PAPER PROPOSAL II DUE

Wed., Oct. 11: *Optional Class: Problem Set Help Session (TA)*

Thurs., Oct. 12: Multiple Regression Dummy and Categorical Variables (continued)

Mon., Oct. 16: Multiple Regression IV: Hypothesis Testing
ALZ, Chapter 12.3
PROBLEM SET #3 DUE

Wed., Oct. 18: Multiple Regression V: Using the Concepts

Gopal K. Singh and Stella M. Yu, "Birthweight Differentials among Asian Americans," *American Journal of Public Health* 84(4): 1444-1449

Thurs., Oct. 19: *Midterm Review*

Mon., Oct. 23: **MIDTERM #1 IN CLASS**

IV. Violations of Assumptions

Wed., Oct. 25: *Extra Office Hours to Discuss Papers (PNE 412), and TA is available in classroom*

Thurs., Oct. 26: Violation of Assumptions I: Model Specification
ALZ, Chapter 13.1-13.4

Mon., Oct. 30: Violation of Assumptions II: Multicollinearity
ALZ, Chapter 13.5-13.6

Wed., Nov. 1: *Extra Office Hours to Discuss Papers (PNE 412), and TA is available in classroom*

Thurs., Nov. 2: Violation of Assumptions III: Heteroskedasticity
ALZ, Chapter 14.1-14.3
PAPER SUMMARY STATISTICS & DATA DICTIONARY DUE

Mon., Nov. 6: Violation of Assumptions V: Serial Correlation
ALZ, Chapter 14.1-14.3

V. Additional Topics

Wed., Nov. 8: Additional Topics: Panel Data Models
ALZ, Chapter 18

Thurs., Nov. 9: Additional Topics: Dummy Dependent Variable Models
ALZ, Chapter 16
PAPER OUTLINE DUE

Mon., Nov. 13: Dummy Dependent Variable Models, continued

Wed., Nov. 15: *Optional Class: Problem Set Help Session (TA)*

Thurs., Nov. 16: Additional Topics: Instrumental Variables
ALZ, Chapter 13.6.3

Mon., Nov. 20: Additional Topics: Experiments and Quasi-Experiments

Part of James Stock and Mark Watson, "Chapter 11: Experiments and Quasi-experiments," in *Introduction to Econometrics*, Pearson Education, Inc., 2003. Just pages 373-407.

PROBLEM SET #4 DUE

Mon., Nov. 27: Additional Topics: Using the Concepts

Lori Kowaleski-Jones and Greg Duncan, "Effect of Participation in the WIC Program on Birthweight: Evidence from the National Longitudinal Survey of Youth," *American Journal of Public Health* 92(5): 799-804.

Wed., Nov. 29: *Midterm Review*

Thurs., Nov. 30: **MIDTERM #2 IN CLASS**

VI. Class Presentations

- Mon., Dec. 4: How to Present a Research Paper
- Wed., Dec. 6: Class Presentations I (mandatory class)
- Thurs., Dec.7: Class Presentations II (mandatory class)
- Mon., Dec. 11: Class Presentations III (mandatory class)
- Thurs., Dec. 14: **RESEARCH PAPERS DUE BY 4:30PM**