Economics 203 Econometrics   **Department of Economics**
Fall 2010   **Wellesley College**

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Office hours: M 4-5:30; W 2-3:30   Help Room: M and T 7:30 – 9 pm in PNE 129

ECON 203: Econometrics
Syllabus and Course Policies

Lecture: Monday and Thursday 2:50 – 4:00 pm; Wednesdays 3:35 – 4:45 pm
Classroom: PNE 129

Course Description: Does going to college increase your earnings? Does raising a country's per capita income lead to a lower fertility rate? This course is designed to acquaint you with the statistical methods that economists use to test economic models and examine empirical relationships, primarily regression analysis. Although much of the course will focus on the mathematical development of the methodology, we will also explore how these tools are used in practice by working through examples with data in class and in the problem sets and by reading economics journal articles. You will learn to use a statistical software package, Stata, to analyze data and will write a final research paper testing a hypothesis of interest to you. The goal of the course is to prepare you to read economic literature in your 300-level courses, to conduct your own research in a future course, thesis, or job, and to be more educated consumers of the empirical information you encounter on a daily basis.

Prerequisites: To enroll in this course, you must have taken the following classes or their equivalent: Economics 101, 102 and 103 and Math 115. You may take 102 concurrently.

Readings: The required textbook for the course is *Statistics and Econometrics: Methods and Applications* by Orley Ashenfelter, Phillip Levine, and David Zimmerman (John Wiley and Sons, 2003). The book is available at the college bookstore and will be on reserve at Clapp Library. We will also read several economic journal articles, as noted below. Learning how to read and interpret these articles is an important goal of the course and you should come to class prepared to discuss them. Articles will be made available through the course conference.

Course Format: The course meets on Mondays and Thursdays from 2:50 – 4:00 pm and Wednesdays from 3:35 – 4:45 pm in PNE 129. Attendance is mandatory. Generally, Monday and Thursday class meetings will be used for lectures. Some of the Wednesday class meetings will be used for lab classes. Each of these classes will be structured around an assignment designed to give you an opportunity to try out the concepts you've learned during the previous week. The assignment from each lab will be due the following Wednesday at noon. Other Wednesday class meetings will be used for review sessions and additional office hours for us to discuss your papers. See the schedule below for more details.

Tutoring & Other Resources: Catherine Wu is the attached tutor for the course. Catherine will be available for office hours on Tuesdays 7:30 – 9 pm in PNE 129 to answer questions about the labs or course material. You can also use this time and room to work on your problem sets with your group. The attached tutor for the other section of Econ 203, Becky Cannon, will also be available to answer questions in the same room on Mondays 7:30 – 9 pm.

If you still feel overwhelmed or confused, please consider requesting an individual tutor assigned to you through the PLTC for one-on-one tutoring. This is a free service and can be extremely helpful. Further information and the tutor request form are available at http://www.wellesley.edu/PLTC/

Another resource for assistance with Stata is Carolin Ferwerda (cferwerd@wellesley.edu), a member of the Information Services department who specializes in research and instructional technology, particularly supporting Stata and other data-based software applications. Carolin will hold weekly office hours (time and place TBA) and be available for appointments with individuals or paper groups.

Course Conference: Please add yourself to the course conference (if you registered early, I added you myself) and get in the habit of checking it regularly. I expect that you will check your email and the conference at least every two days during the semester. I will use the conference to make announcements and post assignments and handouts. You can use it to ask questions of me, Catherine or your fellow students. At the end of the second week of classes this will become a closed conference; please let me know if you are unable to access the conference after this time.

Office Hours: Please feel free to stop by during my office hours (listed on the front of this syllabus) if you have any questions, concerns or are interested in learning more about a topic. If you have a conflict with all of my office hours, please let me know within the first week of the course; I will do my best to provide alternative office hours if the demand is sufficient. If conflicts arise throughout the semester, I am also available by appointment.

Email: I will usually respond to email within 24 hours, but my response time may be slower on weekends and holidays. Please plan accordingly if your question is time-sensitive. If your question may be of interest to other students, I encourage you to post on the conference rather than emailing me. However, please cc me on any message posted to the conference to ensure a quicker reply.

Course Requirements: Grades will be based on class participation (5%), problem sets (15%), two midterm exams (30% each), and a final paper (20%). Each component of your final grade will be graded based on a point scale. Any assignment of letter grades to a particular component is purely for informational purposes.

Class Participation (5%): You are expected to attend all class meetings and be a positive contributor. Please make arrangements to get notes from a classmate if you cannot attend on a given day.

Participation in class is recommended and will be much appreciated. Students are responsible for reading the required readings before each class and are expected to actively participate in classroom discussions. Please ask questions in class – if something is unclear to

you, it is most likely unclear to other students as well. Also, please answer questions in class even if you are not sure you are correct. I reserve the right to cold-call if necessary.

Finally, please refrain from inappropriate behavior that detracts from the learning of others and the classroom environment such as emailing, texting, IMing, surfing the internet, etc. Please turn off cell phones.

Problem Sets (15%): The majority of the problem sets will be lab based assignments. These are designed to give you practice with the concepts covered in class and with Stata. **You will work in groups of three students and turn in one assignment per group.** I expect that each member of the group understands all the work that is submitted. I encourage you to work in groups since three heads are better than one. If you are unable to find a group, I will assign you to one. This is also a good opportunity to find other students with whom you work well since your final paper will also be a group assignment.

The problem sets are for your benefit to prepare you for the exams and provide you with the tools you need to complete the final paper project. They will be graded mostly on completeness and effort; it is your responsibility to check correctness with the solution sets.

Problem sets are due on the Wednesday following the lab and should be brought to class, emailed to me or dropped off in my mailbox (not pick-up box) on the 4th floor of PNE. Please write your names on all documents submitted. Late assignments will not be accepted.

Midterm Exams (30% each): Both exams will be in-class exams. For each exam you may bring in one 8.5"x11" piece of paper with writing on both sides (or two sheets with writing on one side each). Please write your name on this page, and it will be collected along with your exam. Midterm 1 (on **October 21**) covers units I-III on the syllabus and midterm 2 (on **December 1**) is cumulative with an emphasis on units IV-V.

Requests for re-grades must be submitted by email to me within one week of the return of that graded assignment or exam to the class. Note that the entire exam is subject to re-grade.

Final Paper (20%): You will work in a group of three to write an empirical research paper. Specifically, you will identify a topic, propose a hypothesis to be tested, review the literature to find other work in this area, find appropriate data, evaluate the data to test your hypothesis using the methods learned in this class and write a 15-page paper describing your project and results. You will also present your results to the class during the final week of the course. Out of respect for your classmates, your attendance at the presentation sessions is mandatory. Each absence will reduce your final paper grade by one third of a letter (e.g. if your paper earns an A- and you miss one presentation day, than your final paper grade will be B+).

It is critical to start working on the paper early in the semester to ensure that all these steps can be completed in time. To help you get an early start, each group will be required to submit a proposal on **October 6** and preliminary data analysis on **November 17**. The final paper is due **December 13**.

Conflicts: If you have a pre-existing conflict with the exam or presentation dates, you must contact me by **September 22** to make alternative provisions. Acceptable conflicts include religious observances and athletic matches. Any alternative provisions will be made at my discretion.

Extension Policy: There will be no make-up exams or excused extensions on written work due, except under extreme circumstances such as severe personal illness or injury (requiring admission to the health center or hospital) or family crisis. In such cases, you must notify me in advance of the missed exam or due date for written work via a phone call or email. You should then contact me within 1 day of the missed assignment/exam to make arrangements to make up the work. I will then notify your class dean that you have taken an extension. Unexcused late work or missed exams will receive a grade of zero.

Disabilities: Students with disabilities who need disability-related accommodations in the completion of course work should contact Jim Wice, Director of Disability Services, to arrange these accommodations. If the accommodations include alternative testing space or time, it is the responsibility of the student to contact me 1-2 weeks in advance of each exam to coordinate the provision of these accommodations.

The Honor Code: As a reminder, the Wellesley Honor Code, "As a Wellesley College student, I will act with honesty, integrity, and respect. In making this commitment, I am accountable to the community and dedicate myself to a life of honor." You should adhere to this code in the completion of all assignments and interactions with all members of the course.

Schedule

I. Introduction
Wed, Sep 8	Introduction I: Introduction to Econometrics
	ALZ, Chapter 1
Thu, Sep 9	Lab 1: Reviewing Statistics
	ALZ, Appendix A (read) and Chapters 2-8 (review as needed)
Mon, Sep 13	Introduction II: Controlled Experiments
	Bertrand and Mullainathan (2004)

II. The Simple Regression Model
Wed, Sep 15	Simple Regression I: Introduction
	ALZ, Chapter 9.1-9.3
	Problem Set 1 Due (in class)
Thu, Sep 16	Lab 2: Learning Stata
Mon, Sep 20	Simple Regression II: Estimating the Parameters
	ALZ, Chapter 9.4-9.5
Wed, Sep 22	Lab 3: Running Simple Regressions
	Problem Set 2 Due (in class)
Thu, Sep 23	Simple Regression III: Properties
	ALZ, Chapter 10.1-10.3, 10.7

| Mon, Sep 27 | Simple Regression IV: Hypothesis Testing |
| | *ALZ, Chapter 10.4-10.5* |

| Wed, Sep 29 | No Lab; Sign up for paper discussion this week (PNE 415) |
| | **Problem Set 3 Due (by 5 pm in mailbox)** |

| Thu, Sep 30 | Simple Regression V: Goodness of Fit |
| | *ALZ, Chapter 10.6* |

III. The Multiple Regression Model

| Mon, Oct 4 | Multiple Regression I: Introduction |
| | *ALZ Chapter 11* |

| Wed, Oct 6 | Lab 4: Evaluating Statistical Significance and Goodness of Fit |
| | **Paper Proposal Due (in class)** |

| Thu, Oct 7 | Multiple Regression II: Dummy Variables |
| | *ALZ, Chapter 12.1-12.2* |

| Mon, Oct 11 | Fall Break, No Class |

Tue, Oct 12	Multiple Regression III: Categorical Variables/Interaction Terms
	ALZ, Chapter 12.1-12.2
	(Monday Schedule)

| Wed, Oct 13 | Lab 5: Running Multiple Regressions |
| | **Problem Set 4 Due (in class)** |

| Thu, Oct 14 | Multiple Regression IV: Hypothesis Testing |
| | *ALZ, Chapter 12.3* |

Mon, Oct 18	Multiple Regression V: Using the Concepts
	Hakes and Sauer (2004)
	Problem Set 5 Due (in class)

| Wed, Oct 20 | Midterm Review |

| Thu, Oct 21 | **** Midterm 1: Sections I - III **** |

IV. Violations of Assumptions

| Mon, Oct 25 | Violations of Assumptions I: Errors in Model Specification |
| | ALZ, Chapter 13.1-13.3 |

| Wed, Oct 27 | Tanner Conference, No class |

| Thu, Oct 28 | Violations of Assumptions II: Nonlinearities/Multicollinearity |
| | *ALZ, Chapter 13.4-13.5* |

Mon, Nov 1	Violations of Assumptions III: Measurement Error/ Heteroskedasticity
	ALZ, Chapter 13.6, 14.1-14.2
Wed, Nov 3	Lab 6: Exploring Errors in Model Specification

V. Additional Topics

Thu, Nov 4	Additional Topics I: Panel Data Models
	ALZ, Chapter 18
Mon, Nov 8	Additional Topics II: Panel Data Models Continued
Wed, Nov 10	No Lab; Available to Discuss Papers (PNE 415)
	Problem Set 6 Due (by 5 pm in mailbox)
Thu, Nov 11	Additional Topics III: Dummy Dependent Variable Models
	ALZ, Chapter 16
Mon, Nov 15	Additional Topics IV: Natural Experiment Techniques
	Lavy (2004)
Wed, Nov 17	Lab 7: Using Panel Data
	Paper Summary Statistics Due (in class)
Thu, Nov 18	Additional Topics V: Instrumental Variables
	ALZ, Chapter 13.6.3
Mon, Nov 22	Additional Topics VI: Using the Concepts
	Duflo (2001)
Wed, Nov 24	No Lab; Use this time to meet with your paper group.
	Problem Set 7 Due (by 5 pm in mailbox)
Thu, Nov 25	Thanksgiving, No Class
Mon, Nov 29	Midterm Review
Wed, Dec 1	**** Midterm 2: Cumulative, with emphasis on IV-V ****

VI. Class Presentations

Thu, Dec 2	How to Present a Research Paper
Mon, Dec 6	Class Presentations I
Wed, Dec 8	Class Presentations II
Thu, Dec 9	Class Presentations III
Mon, Dec 13	**Final Paper Due by 5 pm to my mailbox**