

**Economics 255/Econometrics (Fall 2016)**

David J. Zimmerman  
Wednesday 7:00 – 9:40 pm  
Schapiro 129

**Office Hours:** TBD

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**TA:** James Pappas (jrp2@williams.edu)

**Texts** (available at Water Street Books):

Michael A. Bailey, real econometrics, Oxford University Press, 1st edition, 2016

**Glow:** I'll post problems sets, data, and solutions to problem sets and practice problems.

**Organization:**

This course provides an introduction to the theory and practice of applied quantitative economic analysis. It will familiarize students with the strengths and weaknesses of the basic empirical methods used by economists to evaluate economic theory against economic data. The course will emphasize both the statistical foundations of regression techniques and the practical application of those techniques in empirical research. Computer exercises will provide experience in using the empirical methods, but no previous computer experience is expected.

**Grades:**

Final grades will be weighted as follows:

Problem Sets	.15
Two Midterm Exams	.60
Final Group Paper and Presentation	.25

## Topics and Readings

Wednesday, September 14

Topic: Introduction

Statistics Review

Notes:

The Nature and Scope of Econometrics

Introduction to Probability

Random Variables, Probability Distributions and the Math of Expectations

Some Important Distributions

*Practice problems (not graded): A.7, B.2, B.3, B.6, B.10 (i and ii)*

*Note: Practice problems are found in the file Practice Problems on*

*GLOW! Solutions are there too!*

Wednesday, September 21

Topic: Statistics Review

STATA

Notes:

Statistical Inference and Confidence Intervals

Confidence Intervals and Hypothesis Testing

STATA handout

*Practice problems (not graded): C.1 (i – iii), C.6*

Problem Set #1: out

Wednesday, September 28

Topic: Causality

OLS

Chapters 1-3.2 in textbook

Notes:

Simple Linear Regression I

Simple Linear Regression II

Contrary to Fact/Gauss Markov Theorem/Estimation 3 ways

*Practice problems (not graded): 2.1, 2.3, 2.5, 2.6, 2.11*

Problem Set #1: in

Problem Set #2: out

Wednesday, October 5

Topic: Hypothesis Testing/Interval Estimation/Multiple Regression

Chapters 3.3-3.8, 4 and 5 in textbook

Notes:

Multiple Regression I

(More) Multiple Regression

R-square and cancer/Educational Goodwill/Roommates

*Practice problems (not graded): 3.1, 3.2, 3.3, 4.2, 4.3, 4.4, 4.5, 7.1, 7.2, 7.3, 7.8*  
Problem Set #2: in  
Problem Set #3: out

Wednesday, October 12

Topic: Multiple Regression continued  
Chapters 6 and 7 in textbook  
Notes:

Multiple Regression II  
Conducting an Empirical Project  
Evaluating an Empirical Paper  
Problem Set #3: in  
Problem Set #4: out

Wednesday, October 19

Topic: **Midterm Exam I**

Wednesday, October 26

Topic: Dummy Dependent Variable Models  
Chapter 12  
Notes:

Dummy Dependent Variables  
Students choosing colleges  
Behavior under extreme conditions  
Index of Oscar Worthiness

*Practice problems (not graded): 8.5*

Problem Set #4: in  
Problem Set #5: out

Wednesday, November 2

Topic: Identifying Causal Effects  
Chapters 8/9/11  
Notes:

Causality  
Panel Data Fixed Effects  
(More!) Fixed Effects

*Practice problems (not graded): 15.1, 15.2, 15.7*

Problem Set #5: in  
Problem Set #6: out

Wednesday, November 9

Topic: More Identifying Causal Effects  
(More) on IVs  
Aizner and Doyle: Juvenile Incarceration  
Project Descriptions

Chapters 9/10/11  
*Practice problems (not graded): 15.1, 15.2, 15.7,13.6*  
Problem Set #6: in  
**Project Proposal Due Wednesday, November 9 (in class)**

Wednesday, November 16  
Topic: **Midterm Exam II**  
Chapter 11

Wednesday, November 23 \*\* Thanksgiving Holiday \*\*

Wednesday, November 30  
Topic: Group Presentations

Wednesday, December 7  
Topic: Group Presentations

## FINAL PAPER ASSIGNMENT

One requirement for this class is a final paper that you will write in groups of three or four (depending on the size of the class) and present to the class during the last two weeks of the semester. For this paper, your group will be responsible for choosing the particular topic that you will write about, subject to certain limitations. Your topic should require an econometric analysis that attempts to identify the statistical relationship between one or more variables and another variable. Also, you must choose a topic for which data are available and its availability must be kept in mind at all times. I will help you locate relevant data sources, but in your brainstorming regarding possible topics, you should also consider whether it makes sense that the types of data you would need might be available to you. For instance, tax records are never made publicly available and do not expect the College to hand over student's grades. Likewise, things like attitudes towards work cannot be assessed easily in a survey of workers. Subject to data availability, any feasible econometric analysis is acceptable.

Your paper should include the following components: (1) an introduction which motivates why your topic is important and interesting; (2) a brief literature review that identifies whether other people have examined your question in the past and what they found; (3) a theoretical discussion that indicates what you are expecting to find and why; (4) a description of the data source you used and some descriptive statistics from those data; (5) a description of your econometric analysis and the results; and (6) what you concluded based on your results, including the strengths and weaknesses of your analysis. Because of the group nature of this project, these components can be divided up among group members, with the exception of 5 and 6, which will require the participation of all members. The final length of your paper should be 10 to 15 pages including any tables reporting your statistical results.

To facilitate the process of developing paper topics and verifying that appropriate data are available for this project, a formal proposal of no more than one page will be due in class on **Nov 9**. This proposal should briefly indicate the question being asked and how you plan to address it, including a brief discussion of the data you will use. I encourage you to make an appointment with me to help you define a specific topic, but you should come prepared with at least a broad set of issues in which you are interested.