

# GEORGE MASON UNIVERSITY

## Econ 345 —Econometrics

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Office hours:	TBA

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### Time and Venue

Mondays and Wednesdays at Robinson Hall B368 12:00-1:15pm

### Description

This course will introduce you to regression analysis and other tools needed to analyze data in the social sciences. The emphasis is on empirical applications.

The main objectives of the course are: 1) To provide you with the ability to analyze critically the empirical analysis done by others at a level sufficient to make sound decisions based on the analysis. 2) To provide you with the skills necessary to perform empirical analysis on your own.

### Readings and Materials

Required textbook, readings, and software:

- J. Stock and M. Watson. *Introduction to Econometrics*, Third or Fifth edition. Pearson. [Abbr.: SW]
- Papers listed in the course outline.
- *Stata*; the small version suffices for this course:  
<http://www.stata.com/order/new/edu/gradplans/student-pricing/>

I also recommend you to have a look at:

- J. D. Angrist and J-S. Pischke, *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press. <http://press.princeton.edu/titles/8769.html>

### Requirements and Grading

Students will be evaluated on the basis of class participation (5%), quizzes (25%), problem sets (30%), and mid-term (20%) and final exams (20%).

At the start of each class (with the exception of the first) you will be given a short quiz cover the readings for that week.

There will be several problem sets. The problem sets must be delivered in print at the beginning of class the day that it is due to receive credit. You may work on the problem sets in small groups.

You must, however, write up your answers individually, in your own words. Put the names of your study group member(s) on your problem set. Duplicate answers will receive no credit.

### **Honor Code Policy:**

Mason is an Honor Code university; please see the Office for Academic Integrity for a full description of the code and the honor committee process. The principle of academic integrity is taken very seriously and violations are treated gravely. What does academic integrity mean in this course? Essentially this: when you are responsible for a task, you will perform that task. Cheating is totally unacceptable. When you rely on someone else's work in an aspect of the performance of that task, you will give full credit in the proper, accepted form. Another aspect of academic integrity is the free play of ideas. Vigorous discussion and debate are encouraged in this course, with the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives, and traditions. When in doubt, please ask for guidance and clarification.

### **Disability Accommodation**

If you are a student with a disability and you need academic accommodations, please see me and contact the Office of Disability Services (ODS) at 993-2474, <http://ods.gmu.edu>. All academic accommodations must be arranged through the ODS.

### **Undergraduate Course Repetition Policy:**

Beginning fall 2018, there is a limit of three graded attempts for this course. A W does not count as a graded attempt. Please see AP. 1.3.4 in the University Catalog and consult with your academic advisor if you have any questions.

### **Technology Policy:**

Laptops and tablets are permitted in class but are not permitted during daily quizzes or exams.

### **Office Hours and Email:**

The best way to reach me is by email at [ggolino@gmu.edu](mailto:ggolino@gmu.edu). If email is not the best way to handle an issue, my office hours are Wednesdays 2-4:00pm in the Economics suite at Buchanan Hall.

## Course Outline

### Week 1

Introduction.

Reading: “Economists are prone to fads,” *The Economist*, November 26, 2016  
And “Impact Evaluation”

### Week 2

Review of statistics, part 1

Readings: SW 1–2 (focus: 1, 2.1–2.3, 2.5–2.6)

Review of statistics, part 2. Introduction to *Stata*

Readings: SW 3 (focus: 3.1–3.5, 3.7)

### Week 3

Descriptive statistics with cargo truck data

Bivariate regression, part 1. A second look at *Stata*

Readings: SW 4 (focus: 4.1–4.3, 4.6)

### Week 4

Assignment due: Problem Set 1

Data mining with cargo truck data

Bivariate regression, part 2

Readings: SW 5 (focus: 5.1–5.4, 5.7)

### Week 5

Calculating stock *alphas* and *betas*

Data: <https://www.youtube.com/watch?v=EoeIn-3jbhI>

Calculation: <https://www.youtube.com/watch?v=zIClflcSrM8>

Multivariate regression, part 1

Readings: SW 6 (focus: 6.1–6.4, 6.7–6.8)

### Week 6

Discussion: La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R. W. (1997). Legal determinants of external finance, *Journal of Finance*, 52(3):1131–1150.

Multivariate regression, part 2

Readings: SW 7, 9 (focus: 7.1–7.2, 7.5, 9.1–9.2)

Assignment due: Problem Set 2

- Week 7** Discussion: Marian M., Spiller P., and Stolorz S. (2016). Rigidity of Public Contracts, *Journal of Empirical Legal Studies*, 13(3):396–427, <http://onlinelibrary.wiley.com/doi/10.1111/jels.12119/full>  
Last draft available at: <https://ssrn.com/abstract=2469270>  
Review session  
Mid-term exam
- Week 8**  
Mar 12, 2018 Spring break
- Week 9**  
Nonlinear regressions, part 1: interactions  
Readings: SW 8 (focus: 8.1, 8.3)<sup>[L]<sub>SEP</sub>]</sup>  
Discussion: Rajan R., and Zingales L. (1998). Financial Dependence and Growth, *American Economic Review*, 88(3):559–586, <http://www.jstor.org/stable/116849>.
- Week 10**  
Nonlinear regressions, part 2: quadratics, logs  
Readings: SW 8, (focus: 8.1–8.2, 8.4)  
Data mining cargo truck data, part 2
- Week 11**  
Binary dependent variables  
Readings: SW 11 (focus: 11.1–11.3)  
Assignment due: Problem Set 3  
Discussion: Moszoro, M and Spiller P., “Political Hazards and the Choice of Contracting: The Case of Municipal Bonds,” <https://ssrn.com/abstract=2493554>
- Week 12**  
IV regression  
Readings: SW 12 (focus: 12.1, 12.3–12.5)<sup>[L]<sub>SEP</sub>]</sup>  
Videos: <https://www.youtube.com/watch?v=FQ3d2syNfYI#t=14.527801>  
Derivation of IV estimator:  
<https://www.youtube.com/watch?v=OWHCbEP56ms>,  
[https://www.youtube.com/watch?v=cX5q\\_dKt6iU](https://www.youtube.com/watch?v=cX5q_dKt6iU)

Endogeneity: <https://www.youtube.com/watch?v=ILI-0pK9MD8>; testing for endogeneity: <https://www.youtube.com/watch?v=61I-8tDgwag#t=5.142279>

Two-Stage Least Squares: <https://www.youtube.com/watch?v=3GF3rpkaDfU>; example of 2SLS:

<https://www.youtube.com/watch?v=54QIRrMkJsk#t=2.448849>

Discussion: Acemoglu, D. and Johnson, S. (2005). Unbundling Institutions. *Journal of Political Economy*, 113(5):949–995.

Klick, J. and Tabarrok, A. (2005). Using Terror Alert Levels to Estimate the Effect of Police on Crime. *Journal of Law & Economics*, 48(1):267–279, <http://www.jstor.org/stable/10.1086/426877>.

Levitt, S.D. (2002). Using Electoral Cycles in Police Hiring to Estimate the Effects of Police on Crime: Reply. *American Economic Review*, 92(4):1244–1250, <http://www.jstor.org/stable/3083312>.

### Week 13

Experiments, quasi-experiments, and diff-in-diff

Discussion: Green, Kim and Yoon. (2001) Dirty Pool.

[https://www.jstor.org/stable/3078638?seq=1#metadata\\_info\\_tab\\_contents](https://www.jstor.org/stable/3078638?seq=1#metadata_info_tab_contents)

Readings: SW 13 (focus: 13.1–13.5)<sup>[1]</sup><sub>[SEP]</sub>

Discussion: Moszoro, M. and M. Bykhovsky, “Political Cognitive Biases Effects on Fund Managers’ Performance,” <https://ssrn.com/abstract=2811350>

### Week 14

Panel data and fixed effects

Readings: SW 10.1–10.4

Assignment due: Problem Set 4

Practice on hedge funds data

### Week 15

Exam preparation and Q&A

Final exam