COURSE DETAILS
Title: **ECON 6375 Econometrics**
Section: Section 10 (CRN 12573)
Location: Monroe Hall (2115 G St., NW), Room 351
Time: Tuesdays, 18:10 - 20:45

INSTRUCTOR
Name: Adam J. Cole, Ph.D.
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Office hours: By appointment

Disclaimer: The views expressed in this course are mine personally, and they do not necessarily reflect the views of the Department of the Treasury or the U.S. Government.

COURSE DESCRIPTION
This course focuses on techniques for estimating parametric linear regression models, on problems commonly encountered in estimating such models—and what to do about them—and on interpreting the estimates from such models. The goal of the course is to introduce you to both the theory and practice of econometrics: how to design and estimate a regression model with actual data, how to interpret regression results, and how to analyze critically the validity of the techniques used in empirical studies in economics. Students will become proficient in using statistical software—in particular, Stata—to perform the basic econometric analyses studied in this course.

PREREQUISITE
Probability and Statistics for Economics (Econ 6374)
Mathematical Methods for Economics (Econ 6300)

The substantive background you should have includes familiarity with the following concepts: random variables, probability distributions, independence of random variables, expected value (and properties of the expected value operator), variance (including calculating the variance of a sum of random variables), sampling distribution, hypothesis testing, confidence interval, estimation, and properties of estimators (such as unbiasedness and consistency). You should also have had one semester of calculus. This is a challenging course.
TEXT

Required

or


Optional/Supplemental

STATISTICAL SOFTWARE
We will use Stata, which is available at the campus computing centers. Lots of information on Stata can be found here: https://www.stata.com/links/resources1.html. There are videos about Stata here: https://www.youtube.com/user/StataCorp. You can order your own copy of Stata at a very low rate; see the information here: http://www.stata.com/order/new/edu/gradplans/student-pricing/.

LEARNING OUTCOMES
As a result of completing this course, students will:

1. be familiar classical regression theory and techniques,
2. be comfortable using econometric software (Stata) for regression analysis,
3. be able to interpret regression results and test economic models, and
4. be able to critically evaluate the implications of regression results presented in research papers.

GRADING
Midterm Exam #1: 30%
Midterm Exam #2: 30%
Research Paper: 30%
Research Paper Presentation: 10%

I will use the grading system announced at the beginning of the semester. I will not make any exceptions to this rule. I will not change the weighting of the different components of the grade on an individual basis.

PROBLEM SETS
I will post many problems to the course website. These will not be graded, but I will supply solutions. The problem sets will ask you to estimate econometric models and discuss results. Getting the correct answer and how well you interpret your results are both important.

To get the most out of the problem sets, first try to solve each problem on your own. Then get together with your classmates, and work through the problems. Then read the solutions. Then talk with the TA and me if there are any outstanding questions. The problem sets are as much about gaining insights as they are about algorithms.

**EXAMS**
The course includes two midterm exams. Both are cumulative in the sense that they cover all of the material in the course up to (and including) the lecture preceding the exam. The dates and times for the exams appear on the schedule below, and all students are expected to be available for the exams.

If you miss the first midterm, then your second midterm exam will contribute 60% to your final grade. There will be no make-up first midterm exam.

If you miss the second midterm due to a documented illness or family emergency, we will sort out some arrangement that may or may not include a make-up exam. If a make-up exam is offered, it may be an oral one, rather than a written one. Travel plans, no matter how far in advance you made them, how far you are traveling or how much the ticket cost, do not constitute a valid reason for missing the second midterm.

**RESEARCH PAPER ASSIGNMENT**
An empirical research paper is due at the end of the term. There will be preliminary assignments prior to the final due date to encourage you to define your research question, identify the data you will use in the analysis, and report your progress. You will also make a presentation to the class about your paper. More information on this project will be provided on a separate handout.

**OTHER CLASS POLICIES**
**UNIVERSITY POLICY ON RELIGIOUS HOLIDAYS**
1. Students should notify faculty during the first week of the semester of their intention to be absent from class on their day(s) of religious observance;
2. Faculty should extend to these students the courtesy of absence without penalty on such occasions, including permission to make up examinations; and
3. Faculty who intend to observe a religious holiday should arrange at the beginning of the semester to reschedule missed classes or to make other provisions for their course-related activities.

For GW’s teaching policies, see http://www.gwu.edu/~academic/Teaching/main.htm.

**ACADEMIC INTEGRITY**
I personally support the GW Code of Academic Integrity. It states: “**Academic dishonesty is defined as cheating of any kind, including misrepresenting one’s own work, taking credit for the work of others without crediting them and without appropriate**
authorization, and the fabrication of information.” Please note that allowing another student to copy your work is defined as cheating under the Academic Integrity code.

Common examples of academically dishonest behavior include, but are not limited to
1. Cheating,
2. Fabrication,
3. Plagiarism,
4. Falsification and forgery of University academic documents, and 5. Facilitating academic dishonesty.

Sanctions range from failure of the assignment, to failure of the course, to suspension or expulsion from the University. For the remainder of the code, see http://www.gwu.edu/~ntegrity/code.html.

All students need to be familiar with GW’s Code of Academic Integrity. Item 3 in Section 1 of Article II of the Code deals with plagiarism. “Plagiarism - intentionally representing the words, ideas, or sequence of ideas of another as one’s own in any academic exercise; failure to attribute any of the following: quotations, paraphrases, or borrowed information.” For a full set of definitions, see: http://www.gwu.edu/~ntegrity/code.html#definition.

Plagiarism is a serious matter both inside and outside academia. Students are responsible for becoming familiar with the different forms that plagiarism can take. Ignorance doesn’t exempt students from being penalized for plagiarism. It is essential to educate yourself about what constitutes plagiarism before writing an essay for a take-home exam, a term paper, a dissertation, or a report in the workplace. Students have failed the course or been expelled because of plagiarism.

You can find a good overview of plagiarism and how to avoid it at http://widstudents.wordpress.com/tag/plagiarism/.

It’s worth reading through the entire web page, including the section titled “Plagiarism Tales at GW.” The following document has good examples of the different forms that plagiarism can take (in Section 4). You should read 1–4 carefully. The document should dispel the possible misconception that plagiarism is committed only when an entire paper, or large parts of a paper, are copied. That is NOT the case. Copying a sentence or even a phrase without properly attributing it constitutes plagiarism. http://www.ece.msstate.edu/simfowler/Classes/plagiarism.pdf

On the important distinctions among quoting, paraphrasing, and summarizing, see http://owl.english.purdue.edu/owl/resource/563/01/.

On the proper use of quotations, see http://writingcenter.unc.edu/resources/handouts-demos/citation/quotations.

SUPPORT FOR STUDENTS OUTSIDE THE CLASSROOM
**DISABILITY SUPPORT SERVICES (DSS)**
Any student who may need an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in Rome Hall, 801 22nd St., NW, Suite 102, to establish eligibility and to coordinate reasonable accommodations. For additional information, please refer to https://disabilitysupport.gwu.edu/. Students must arrange with the DSS office well in advance of needing the service.

**UNIVERSITY MENTAL HEALTH SERVICES 202 994 5300**
The University’s Mental Health Services offers 24/7 assistance and referral to address students’ personal, social, career, and study skills problems. Services for students include crisis and emergency mental health consultations, confidential assessment, counseling services (individual and small group), and referrals. For additional information, see: https://healthcenter.gwu.edu/mental-health.

**SECURITY**
In the case of an emergency, if at all possible, the class should shelter in place. If the building that the class is in is affected, follow the evacuation procedures for the building. After evacuation, seek shelter at a predetermined rendezvous location.

**AVERAGE MINIMUM AMOUNT OF INDEPENDENT, OUT-OF-CLASS, LEARNING EXPECTED PER WEEK**
In a 15 semester week, including exam week, students are expected to spend a minimum of 100 minutes of out-of-class work for every 50 minutes of direct instruction. This 3-credit course includes 2.5 hours (150 minutes) per week in lecture. Accordingly, homework and other out-of-class work are estimated at around 300 minutes per week. More information about GW’s credit hour policy can be found on GW’s website.
### Tentative Course Schedule

<table>
<thead>
<tr>
<th>Week of Exams</th>
<th>Research Paper/Exams</th>
<th>Topics Covered</th>
<th>Readings</th>
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<tbody>
<tr>
<td>May 21</td>
<td></td>
<td>Introduction to course</td>
<td>DiNardo (2005)</td>
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<tr>
<td></td>
<td></td>
<td>Review of probability and statistics</td>
<td>(esp. §§4-5); SW Chs. 1, 2, and 3</td>
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<tr>
<td>May 28</td>
<td></td>
<td>Introduction to Stata</td>
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<tr>
<td>June 4</td>
<td></td>
<td>Simple Linear Regression: Estimation and Inference</td>
<td>SW Chs. 4 and 5</td>
</tr>
<tr>
<td>June 11</td>
<td>RP#1</td>
<td>Multiple Linear Regression: Estimation and Inference</td>
<td>SW Chs. 6, 7, and 8</td>
</tr>
<tr>
<td>June 18</td>
<td>Midterm #1</td>
<td>Assessing Studies Based on Multiple Regression Analysis</td>
<td>SW Ch. 9</td>
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<tr>
<td>June 25</td>
<td>RP#2</td>
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<tr>
<td>July 2</td>
<td></td>
<td>Limited Dependent Variables</td>
<td>SW Ch. 11</td>
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<tr>
<td>July 9</td>
<td>RP#3</td>
<td>Instrumental Variables</td>
<td>SW Ch. 12</td>
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<tr>
<td>July 16</td>
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<td>Panel Data Natural Experiments</td>
<td>SW Chs. 10 and 13</td>
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<tr>
<td>July 23</td>
<td>Midterm #2</td>
<td>Research Presentations</td>
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<tr>
<td>July 30</td>
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<td>Research Paper Due at 18:10</td>
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Note: I reserve the right to adjust this as needed.

### Reference