PAD 705 Fall 2012
Research Methods II

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Objectives:
This course introduces students to multiple regression analysis for analyzing data in the social sciences. The course has four main goals:

1. Students should understand the importance of empirical analysis for addressing policy and management issues
2. Students should be able to read and critique empirical analysis used in academic/professions publications
3. Students will understand what empirical techniques should be utilized given different situations
4. Students will perform empirical analysis and interpret the results.

I am assuming that you have knowledge of statistics at the level taught by PAD 505. Calculus is not required for this class, however many derivations in the textbooks utilize calculus, therefore, a conceptual understanding of calculus will make comprehension of the material easier. If you are a PAD Ph.D. student, this course does serve as one component of your Core (and thus, your Core GPA). Remember that the Core GPA determines whether students will continue in the Program after the first year.

Readings:
I highly recommend that you buy an econometrics textbook to clarify the course materials. The two textbooks most relevant to this class are Pindyck and Rubenfeld’s Econometrics Models and Economic Forecasts (4th Edition) and Gujarati’s Basic Econometrics (4th edition). These books should be available through Mary Jane’s bookstore. We will be making extensive use of Stata in this class. Therefore, if you are not familiar with the software, you may want to purchase A Gentle Introduction to Stata (Acock).

I will also make class handouts available to you over time. I strongly recommend reading the relevant handouts before each class.
Software:
The recommended software package for this course is Stata 11 (although older versions should be acceptable). You do not have to buy stata, but can purchase it directly at the following URL: http://www.stata.com/order/new/edu/gradplans/gp-campus.html

There are three versions of Stata:
1. Stata/SE or Stata/MP – If you plan to do a lot of statistical analysis for your dissertation, I would suggest buying one of these versions of Stata. You may also wish to buy the Base Reference Material and Stat Transfer.

2. Stata Intercooled – If you may do some analysis, but not with large datasets (ie. Not over 2047 variables), this version should suffice.

3. Stata Intercooled (1 year license) – If you never plan to do statistical analysis for your work.

Do not buy Small Stata. Some of the datasets used in this class will be too large for that version.

Finally, Stata is available on computers in the campus libraries and other laboratories throughout campus. When you are off campus, you can use the Virtual Information Commons to access Stata on your desktop. These resources should be utilized to complete your assignments.

Assignments:

Assignments in this class consist of: homework, commentaries on the readings, pop quizzes, and an empirical exercise.

Homework assignments must be handed in at the beginning of class on the day they are due. Late assignments should be placed in my faculty mailbox (Milne 103). Late assignments will receive a 20% penalty. Assignments will not be accepted more than 1 week late. Students are strongly encouraged to work in small groups on the homework assignments, but each student must write up his or her answers separately. Do not submit the same answer word for word. Answers that are identical to those of a study partner will receive no more than half credit on the first offense. The second offense will be considered academic misconduct.

If you feel you have received an incorrect grade, I will re-grade assignments but the request must be made in writing within two weeks of the assignment being returned to you. The entire assignment will be re-graded, and your grade may increase, decrease, or remain the same.

You are required to submit 2 comments or questions illustrating comprehension of the assigned material each week that a journal article is assigned. Students can choose to submit 2 questions, 2 comments, or one of each. Comments can focus on something you find interesting, surprising, disagree with, etc. Additionally, comments may "connect the dots" between
assigned readings we will discuss during the semester. Importantly, the commentaries should not be summaries of the reading. Instead they should reflect your thoughts and analysis on the week’s topic and cases. For example, why do you find a particular topic interesting? How does the reading help you understand the topic more effectively? Is there something you disagree with and why? Etc. Questions can indicate a topic you find confusing and why you are unclear on the matter. Focus should be on the methodology, data, and results.

Submission. Commentaries are due the day before class. They are to be submitted no later than 24 hours before the scheduled class time, and are to be submitted through the Assignments area in Blackboard, in electronic form only. Each comment/question should be 4-10 sentences in length. Commentaries submitted less than 24 hours in advance will receive an initial penalty of 20%. Commentaries will not be accepted once class has started.

Pop quizzes will be given regularly throughout the semester. These quizzes will test you on the material of the previous week(s). This assignment will ensure that students do not fall behind.

In additional to regular assignments, there will be an Empirical Exercise in the second half of the course. The Empirical Exercise is to be completed individually or with one other person. More instructions will be available on the Empirical Exercise later in the term. The Empirical exercise will not be accepted late.

Grading:
Homework Assignments: 20%
Empirical Exercise: 15%
Midterm: 25%
Final Exam: 25%
Pop Quizzes: 10%
Class Participation/Weekly Commentaries: 5%

As a general policy, a grade of C-, D, or F will only be given if the student’s average falls at least 1.5 standard deviations below the mean.

Time commitment for this course:
This course is a four-credit graduate course, and part of the PAD Ph.D. core. You should plan on spending 3-4.5 hours per week in class/lab. In addition, you should expect to spend approximately 6-12 hours per week reading class assignments, preparing problem sets, and working on the empirical exercise. If you discover that you are spending more than twelve hours per week outside of class on this course, please let me know so that we can discuss it.

Plagiarism and cheating:
Due to the intensive nature of this course, students are expected to form study groups and to work together on assignments. Learn by interacting with one another – support and help one another. However, all students must submit an individually prepared copy of their homework. Also, some work, such as the Empirical Exercise, must be completed by the individual (or the
individual and an approved partner) without collaboration from anyone else. **As a policy for this course, plagiarism or cheating will result in a failing grade for the whole course.** In addition, I may pursue further disciplinary action at the University level, including suspension and/or expulsion. For the purpose of this course, the following are taken as evidence of plagiarism or cheating (this list is not exhaustive):

- Material reproduced from another source without adequate citation
- Identical answers being turned in by two or more students on a problem set, midterm, final, or Empirical Exercise
- Collaboration on the Empirical Exercise by two or more students without prior authorization
- A pattern of unusually similar answers being turned in by two or more students on the Empirical Exercise, midterm, or final
- Written answers or solutions that a student cannot logically explain verbally

**PLEASE NOTE:** Seeking problem sets, answers to problems sets, past exams, or past exam answers from any previous student is prohibited without my expressed, written permission. I will treat such behavior as serious academic misconduct by both the current and past student.

Your work may be subject to computerized analysis to discover whether material have been taken from on-line sources or to determine statistically whether answers are more similar than random chance would allow. Since this is such an important matter, if you have any questions about this course policy, you should ask me for any clarification that you may need.
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<thead>
<tr>
<th>DATE</th>
<th>TOPIC</th>
<th>READINGS DUE</th>
<th>WRITTEN WORK DUE</th>
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| August 29 | Introductions & organization  
Compare to experimental models  
review bivariate regression  
Gauss Markov Conditions  
Multivariate regression | • P&R Ch 1,2, 3.1-3.4  
• Handouts |                                                       |
| September 5 | Discuss Problem Set  
Multivariate regression  
Functional Forms  
Dummy variables  
Interactions  
Outliers  
Goodness of Fit | • P&R Ch 4.1-4.3, 4.5, 5.1-5.2, 7.3.3, Appendix 5.1  
• Handouts  
• Ashraf (1994) “Differences in Returns to Education: An Analysis by Race” American Journal of Economics and Sociology | Problem set 0 Due (not graded)  
Commentaries Due 24 hours before class |
| Sept 12   | Elasticities  
Standardized coefficients  
Hypothesis testing  
Goodness of fit  
Multicollinearity  
Measurement Error and Omitted variable bias | • P&R Ch 4.4, 5.3, 5.5, 6.1, 7.1-7.4  
• Handouts |                                                       |
| Sept 19   | Heteroskedasticity  
Discuss Card & Krueger | • P&R Ch 5.5, 6.1-6.2  
• Handouts | Problem Set 1 Due  
Commentaries Due 24 hours before class |
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<th>Date</th>
<th>Topic</th>
<th>Readings</th>
<th>Additional Notes</th>
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<tr>
<td>Sept 26</td>
<td>Discuss Problem Set&lt;br&gt;Serial Correlation&lt;br&gt;Panel Data (FE and RE)</td>
<td>• P&amp;R Ch 6.2, 9.4&lt;br&gt;• Handouts</td>
<td>Problem Set 2 Due</td>
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<td>Oct 3</td>
<td>Panel Data, continued</td>
<td>• P&amp;R Ch 7.2.4, 9.4&lt;br&gt;• Handouts</td>
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<td>Oct 10</td>
<td>MIDTERM</td>
<td>All Material through October 10th (including Problem set 3) is covered</td>
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<td>Oct 17</td>
<td>Discuss Midterm&lt;br&gt;Simultaneous equations regression&lt;br&gt;Instrumental variables</td>
<td>• P&amp;R Ch 12.1-12.3&lt;br&gt;• Handouts&lt;br&gt;• P&amp;R Ch 12.4 – 12.5</td>
<td>Problem Set 3 Due</td>
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<td>Oct 31</td>
<td>Introduce MLE&lt;br&gt;Introduce regression with qualitative dependent variables&lt;br&gt;Empirical Exercise</td>
<td>• P&amp;R Appendix 2.2, Ch 10.2-10.2.2, 11.1&lt;br&gt;• Handouts</td>
<td>Problem Set 4 Due</td>
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<td>Nov 7</td>
<td>Regressions with qualitative dependent variables</td>
<td>• P&amp;R Appendix 2.2, Ch 10.2-10.2.2, 11.1&lt;br&gt;Reynolds, Pemberton (2001) “Rising College Expectations Among Youth in the United States” <em>Journal of Human Resources</em></td>
<td>Commentaries Due 24 hours before class</td>
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<td>Nov 14</td>
<td>Discuss Problem Set&lt;br&gt;Advanced topics - Factor Analysis</td>
<td>• Handouts</td>
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<td>Nov 21</td>
<td>NO CLASS</td>
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<td>Nov 28</td>
<td>Granger causality</td>
<td>• Handouts</td>
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<td>Problem Set 5 Due</td>
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<td>Commentaries Due 24 hours before class</td>
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<td>Dec 5</td>
<td>Empirical Exercise discussion</td>
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<td>Course evaluation/wrap up</td>
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<td>Dec 19 (Tentative)</td>
<td><strong>FINAL EXAM</strong></td>
<td>Everything is covered, but special attention is paid to material since the midterm</td>
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