RPAD 725 ADVANCED APPLIED QUANTITATIVE METHODS: 
COURSE SYLLABUS FOR SPRING 2018

Classroom: Husted Hall 006  Instructor: Lucy Sorensen
Class Time: Thursday 1:15 - 4:55 PM  Office: Milne Hall 300G
Office Hours: By Appointment  Email: lsorensen@albany.edu

Updated 12/29/17. Please check for updates throughout the semester.

1. Course Description

Summary. This course addresses the ubiquitous challenge in empirical research of navigating the path from cause to effect. Whether you are interested in uncovering evidence of discrimination in the labor market, estimating the long-term impacts of an early childhood intervention, or identifying the connection between sentence length and criminal recidivism, you will need sophisticated statistical tools to help answer your question.

However, the primary goal of this course is not for students to merely obtain a ready-to-use “toolbox” of quantitative methods, but rather to learn the more generalizable process of how to develop a viable and robust identification strategy to answer public policy and administration questions. Students will become critical consumers of empirical policy research and in doing so learn how to both harness the full power, and recognize the limitations, of their own research designs.

Learning Objectives. By the end of the course, students will be able to:

(1) Understand and articulate the underlying assumptions of regression-based quantitative research designs;
(2) Read and critically assess methods and findings from advanced empirical policy research;
(3) Implement a variety of statistical techniques with data to examine the causal impacts of a public policy, program, or practice; and
(4) Complete an original empirical project using secondary data, moving from research question, to research design, to findings and interpretation.

Prerequisites. Students are expected to have taken RPAD 705 Advanced Quantitative Analysis or equivalent coursework. Students should know inside-and-out the methods and assumptions of ordinary least squares regression and basic statistical theory. Experience using Stata through either the RPAD 688 Stata Programming Workshop or other coursework or research projects will be extremely beneficial. This course does not require any specific knowledge of matrix algebra or multivariable calculus, but it does require confidence when approaching mathematical concepts.

Readings. Students in this course will rely regularly upon readings from the following books:


Other readings will be in the form of academic journal articles. To access assigned articles, please first search for the paper title using eDiscover search at library.albany.edu. If that does not work, then check for a posted copy on Blackboard or use Google Scholar search.
Optional Supplemental Reading. The two required books above focus on the concepts of causal inference. They do not go into great detail about the technical aspects of linear regression and non-linear models, nor do they give guidance on how to implement these tools and complete a research analysis using statistical software. The two books below may provide useful guidance for the nuts and bolts of working in Stata:


Software. The recommended software package for this course is Stata. The Information Commons PC computers in the Dewey Library have Stata available for student use. You may also purchase the software directly at http://www.stata.com/order/new/edu/gradplans/campus-gradplan. You should only need Stata/IC for the purposes of this course, but should consider Stata/SE if you intend to continue using the software for future research.

2. Course Policies

Attendance. Students should make every effort to attend every class. It is the responsibility of the student to plan with the instructor ahead of time for any necessary absence and to coordinate with classmates to catch up on course material and assignments.

Office Hours. Office hour appointments will be available on Tuesday and Wednesday afternoons from 3:30 to 6:00 PM. Please use the following link to make appointments: https://lucysorense.youcanbook.me/. This automatically adds an appointment to my calendar. If you cannot find a time on the booking website that works for you, please email me to find an alternative time to meet. I welcome visits for any purpose, but want to especially encourage students to meet with me semi-regularly about their empirical study.

Plagiarism and Citations. Please familiarize yourself with the information at http://library.albany.edu/usered/plagiarism/index.html. Plagiarism is a major offense and can receive severe consequences, from automatically failing the course to being expelled from the program. If in doubt about acceptable use of sources, please ask.

Correct citations are one of the most important elements in avoiding plagiarism. When you use a source, make sure to both include in-text citations and create a bibliography using either the APA formatting style or Chicago Author-Date formatting style.

Accommodations. Reasonable accommodations will be provided for students with documented physical, sensory, systemic, cognitive, learning and psychiatric disabilities. If you believe you have a disability requiring accommodation in this class, please notify the Disability Resource Center (Business Administration 120; 518-442-5490; http://www.albany.edu/disability/current.shtml). That office will provide the course instructor with verification of your disability, and will recommend appropriate accommodations. If you wish to discuss academic accommodations for this course, please also inform the instructor as soon as possible.

---

1If you are an expert in some other software such as R, SAS, or Matlab, you should be able to complete assignments in those programs. However, be warned, this choice may make collaborating with your classmates or troubleshooting certain methods more challenging.
3. Grading

Grading Basics. Below is the breakdown of graded items for the course. Rubrics will be provided to clarify the expectations for each graded component.

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>Four problem sets (8 pts. each)</td>
<td>32</td>
</tr>
<tr>
<td>Presentations</td>
<td>Two paper presentations (8 pts. each)</td>
<td>16</td>
</tr>
<tr>
<td>Empirical Paper</td>
<td>Paper proposal (8 pts.)</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>Final paper (36 pts.)</td>
<td></td>
</tr>
<tr>
<td>Participation</td>
<td>Class preparation and engagement</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Assignments (32 points). For this course you will complete a total of four applied assignments for eight points each. Extensions may be granted in the case of severe medical or family emergency. These assignments incorporate three types of questions: (1) discussion of readings; (2) mathematical understanding of methods; and (3) statistical programming and analysis. Students are strongly encouraged to discuss and work closely with their classmates, provided that each student individually writes their own code, performs their own analysis, and creates their own written responses. Copying answers or code directly from another student will be considered academic dishonesty.

Paper Presentations (16 points). The best way to practice presenting and defending your own research design is to attempt doing so for another author’s study. Each student will have two opportunities to present assigned papers to the class through 30 minute presentations that facilitate full class discussion. Students will sign up for papers of their choice over the course of the semester. Presentations should include discussion of motivating elements of the study (e.g. research question, policy relevance, and theoretical framework) but focus primarily upon the author(s) choice of data, research design and methods, and robustness or sensitivity tests. Both the strengths of the research design and the potential limitations should be thoroughly probed.

Empirical Paper (44 points). One of the intended benefits of this course is that students will finish the semester with a preliminary empirical research paper that incorporates robust causal analysis of a question within the student’s own area of interest. For students in the Public Administration and Policy department, this paper could serve as the seed of an empirical candidacy paper or potentially one chapter in a dissertation. For all students, this paper should move forward their research trajectories either formally (e.g. turn into a publishable article) or informally (e.g. provide practice with a relevant dataset). A paper proposal will be due in late March that should identify a research question, a dataset, a proposed research design, and an annotated list of references to include in a literature review (8 pts.). The final research paper will be due at the final class period (36 pts.), at which point students will have the opportunity to share their research projects with each other and provide collaborative feedback.

Participation (8 points). As in the real world, students will benefit from regularly asking questions, engaging in friendly class debate, coming to class well prepared, and contributing meaningfully to the group’s learning. Participation scores will be determined at the end of the course based on a provided rubric. Students are welcome to speak with the instructor at any time regarding their current level of participation, or any concerns or challenges they are facing in meeting participation expectations.
# 4. Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Due</th>
<th>Readings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week</td>
<td>Topic</td>
<td>Due</td>
<td>Readings</td>
</tr>
<tr>
<td>------</td>
<td>-------------------------------</td>
<td>--------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 2/15 | Matching                      | Methods Matter: Chapter 12  
Mostly Harmless: Chapter 3, Section 3.3  
| 2/22 | Panel Data and Fixed Effects  | Assignment #2  
Mostly Harmless: Chapter 5, Sections 5.1, 5.3  
| 3/1  | Difference-in-Differences     | Mostly Harmless: Chapter 5, Section 5.2  
<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Due</th>
<th>Readings</th>
</tr>
</thead>
</table>
  
  
  
| 3/15 | SPRING BREAK: NO CLASS        |             |                                                                                                                                              |
| 3/22 | Instrumental Variables I      | Assignment #3 | Mostly Harmless: Chapter 4, Sections 4.1 and 4.4 (Skip 4.2, 4.3)  
  
Methods Matter: Chapter 10  
  
  
  
<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Due</th>
<th>Readings</th>
</tr>
</thead>
</table>
| 4/5   | Regression Discontinuity I         | Paper Proposal     | Methods Matter: Chapter 9 Mostly Harmless: Chapter 6  
| 4/12  | Student Project Workshop           | Classmates’ Paper Proposals |

RPAD 725 SYLLABUS - SPRING 2018
<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Due</th>
<th>Readings</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/3</td>
<td>Bayesian Inference</td>
<td>Final Paper</td>
<td>Readings to be determined.</td>
</tr>
</tbody>
</table>