

ECON672  
PROGRAM ANALYSIS AND EVALUATION

*University of Maryland*  
*Summer 2018*

Syllabus (Version 5/28/2018)  
Professor Ryan Nunn  
Email: [rnnn@umd.edu](mailto:rnnn@umd.edu)

Course meeting: Wed 6:45-9:30pm, 1400 16th Street Suite 140. The first class will be on Wednesday, May 30. Because the July 4 holiday falls on a Wednesday, there will be a replacement class on Thursday, July 5 from 6:45-9:30pm. The final class will be Wednesday, August 15.

Office hours: W 6:15-6:45pm, by appointment.

Course pre-requisites: ECON 641; ECON 645 is a co- or prerequisite.

TA email: [Lim@econ.umd.edu](mailto:Lim@econ.umd.edu). The TA's name is Heehyun (Rosa) Lim. Rosa's office hours will be every Wednesday from 5:00-6:30.

**Course description:** The primary objective of this course is to learn the tools that are used to evaluate the effectiveness of public policies. Even when randomized experiments are possible, learning the truth about the effects of policy is not always straightforward. We will focus on both experimental and non-experimental methods, and you will learn how to distinguish high from low quality evaluations in both contexts. We will discuss the economics and econometrics of program evaluation, focusing on the methods used for causal inference. We will examine published evaluation research with the intent of showing how research does or does not lead to clear conclusions regarding program performance.

**Course objectives:**

Our program has 7 general learning outcomes for students:

1. Ability to understand, evaluate and analyze economic data
- 2: Ability to understand and interpret statistical evidence from economic data
- 3: Ability to apply empirical evidence to assessing economic arguments
- 4: Ability to apply macroeconomic theories to policy discussions
- 5: Ability to apply microeconomic theories to policy discussions
- 6: Ability to communicate economic ideas to a broader audience
- 7: Ability to evaluate the effectiveness of policy programs using sound economic techniques

The learning outcomes that pertain to this course are 1, 2, 3, 5, 6, and 7. In addition, this course aims for students to:

- Learn the basics of the economics and econometrics of program evaluation, with a focus on hands-on implementation of econometric methods using actual data. This will include a strong emphasis on applied econometric skills in the Stata context, including macros and other econometric programming tools.
- Critically review the evaluation literature via written comments, formal discussant presentations, and general class discussion of published evaluation research with the aim of showing how the process of knowledge creation through research does or does not lead to clear conclusions regarding program effects.

- Critically evaluate how research is presented in the public domain (e.g., media) to be a better consumer of reported findings.
- Learn the basics of how the evaluation industry functions and how evaluations affect and are affected by policy.

**Course materials:**

Official text: Angrist, Joshua and Jorn-Steffen Pischke. 2009. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton. This is the only required text for this class.

You will also be responsible for all of the journal articles that are listed in the syllabus accompanying lecture. These can be accessed through the library. If you need help obtaining electronic access to articles, the TA can provide assistance.

This book is similar to but less technical than our official text.

Angrist, Joshua and Jorn-Steffen Pischke. 2015. *Mastering 'Metrics*. Princeton University Press.

The following book is pretty standard in evaluation courses taught outside of economics. You may find it of interest. It provides a broader analysis of the evaluation field than will be apparent from this course, which focuses specifically on estimating policy impacts using large datasets and econometric methods.

Rossi, Peter, Mark Lipsey, and Howard Freeman. 2003. *Evaluation: A Systematic Approach*. 7th Edition. Sage.

**Required software:** Stata.

**Course Website:** Copies of the course syllabus, your grades, and other relevant links and documents will be posted on the course's ELMS/Canvas website. You can access the site via [www.elms.umd.edu](http://www.elms.umd.edu). You will need to use your University of Maryland "directory ID" and password.

**Email:** Email is the primary means of communication outside the classroom, and I will use it to inform you of important announcements. Students are responsible for updating their current email address via <http://www.testudo.umd.edu/apps/saddr/> AND for paying attention to messages I send to the class via ELMS. Failure to check email, errors in forwarding email, and returned email due to "mailbox full" or "user unknown" will not excuse a student from missing announcements or deadlines. I will do my best to respond to email within 36 hours.

**Contact Hours:** Three credit courses at the University of Maryland require a minimum amount of contact between instructors and students. Our courses' 12 weekly 3-hour meetings only satisfy 80% of the university's contact requirement. The other 20% is satisfied by weekly mandatory and graded online contact. In principle, the contact hours requirement could be satisfied by scheduling 3 additional 150-minute meetings per term, or 6 additional 75-minute meetings, or 10 additional 45-minute meetings. But in practice the contact hours requirement is satisfied by the weekly online discussions. The weekly online discussions are a more flexible way to ensure that our program's courses in DC provide the same level of student-instructor contact as the traditional 15-week, face-to-face, version of the same course when it is taught on campus in College Park.

**Work Load:** Mastering the material covered in this course requires a significant amount of work outside of class. Students should expect to spend more time outside of class than in class – typically at

least twice as much time. The courses in our DC program are 12-week courses that cover all the same material as a traditional semester-long 3-credit course (15 weeks). The compressed schedule makes it possible to complete our degree in just 15 months if you take 2 courses each term. But the compressed schedule also implies an accelerated pace with an average of 25% more work per week in a given course ( $15/12 = 1.25$ ). The normal full-time load in a master's program is 3 courses per semester, or 6 courses per year. The weekly work load when taking 2 of our courses per term is equivalent to the load from 2.5 "normal" 15-week courses - so  $2.5/3.0=83\%$  of a full-time load. Students who take 2 courses per quarter in our program complete 8 courses per year. So over the course of a year, taking 2 courses per quarter in our program is equivalent to 133% of a full-time load ( $8/6 = 1.33$ ).

**Academic Integrity:** The University of Maryland has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards applicable to all undergraduate and graduate students, and you are responsible for upholding these standards as you complete assignments and take exams in this course. Please make yourself aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information see [www.studenthonorcouncil.umd.edu](http://www.studenthonorcouncil.umd.edu).

**Student Conduct:** Students are expected to treat each other with respect. Disruptive behavior of any kind will not be tolerated. Students who are unable to show civility to one another or myself will be referred to the Office of Student Conduct. You are expected to adhere to the Code of Student Conduct.

**Excused Absences:** The University of Maryland's policy on excused absences is posted here: <http://www.president.umd.edu/administration/policies/section-v-student-affairs/v-100g>

Please note:

If you miss any class meetings for any reason, you are still responsible for all material covered during the meeting you missed. It is your responsibility – not the instructor's – to get yourself caught up in the course. Instructors routinely facilitate things by posting lecture notes, etc.

If you need to miss an exam or other graded course requirement because of illness, injury, or some other emergency: Follow doctor's orders and get documentation. Get in touch with the instructor as soon as you're able – preferably prior to missing the exam or deadline. Communicate with the instructor to make up the course requirement as soon as possible. You are entitled to recover before you make up the course requirement, but you are not entitled to extra days to study beyond the time the doctor's note says you're incapacitated. If you are incapacitated for more than a week or so beyond the end of the term, your grade in the course will be an "Incomplete". In such cases you must negotiate a plan with your instructor for completing the course requirements. Once you make up the course requirement the instructor will change your "I" to the appropriate letter grade.

**School Closings and Delays:** Information regarding official University closing and delays can be found on the campus website and the snow phone line: (301) 405-SNOW (405-7669). Since our program is an evening program in downtown Washington, DC, rather than a day program in College Park, we do not always cancel classes on the same days as the College Park campus. The program director will always announce cancellation information to the program as an announcement on the program's ELMS/Canvas site. This will generally be done by 1:00 p.m. on days when weather or other factors are an issue.

**UMD Counseling Center:** Sometimes students experience academic, personal and/or emotional distress. The UMD Counseling Center in Shoemaker Hall provides comprehensive support services that promote personal, social, and academic success. The cost of these services is covered by the fees you already paid when you registered for classes, and there is no additional charge if you use the

services. Proactively explore the range of services available, including the Counseling Service, Accessibility and Disability Service, Learning Assistance Service, and the Testing Office, all described at <http://www.counseling.umd.edu/>

**Students with Disabilities:** The University of Maryland does not discriminate based on differences in age, race, ethnicity, sex, religion, disability, sexual orientation, class, political affiliation, or national origin. Reasonable accommodations will be arranged for students with documented disabilities. Students who have an accommodations letter from the Accessibility and Disability Service (ADS) should meet with me during the first few weeks of the semester to discuss and plan for the implementation of your accommodations. If you require reasonable accommodations but have not yet registered with ADS, please contact the Accessibility and Disability Service at 301-314-7682 or [adsfrontdesk@umd.edu](mailto:adsfrontdesk@umd.edu).

**Academic Progress:** The graduate school requires that students maintain a GPA of at least 3.0. Students whose cumulative GPA falls below 3.0 will be placed on academic probation by the graduate school. Students on academic probation must ask the program's director to petition the graduate school if they want to remain in the program. The petition must include a plan for getting the student's GPA up to at least 3.0. Students who do not live up to their plan can have their enrollment in the program terminated without having earned the degree. Note: a grade of "B" corresponds to a GPA of 3.0. A grade of "B-" corresponds to a GPA of 2.7.

**Building Access:** The door to the building at 1400 16th Street is unlocked on weekdays until 7:00 p.m. Students who arrive after 7:00 p.m. or on weekends will find the door locked. The building's security guard is stationed at a desk just inside the door until 11:00 p.m. and will let you in. You can also call the phone on the security guard's desk by dialing (202) 328-5158. If the security guard is off duty or happens to be away from his or her desk when you arrive, you can pick up the black phone to the right of the door. You will be connected to the company that handles security for our building. If you tell them you are with the University of Maryland (1400 16<sup>th</sup> Street, suite 140), they should ask you for a password. When you tell them the password, they will be able to buzz you in. If they are unable to buzz you in from 1400 16<sup>th</sup> Street for some reason, go around to the 1616 P Street door to be buzzed in. You can get the password from the program coordinator, the TA, or the program director.

**Purchasing Stata:** Students in our program must purchase Stata. Stata offers different "flavors" and different lengths of licensing. Price varies according to these two factors. We do not recommend Small Stata since it is too limited for the coursework in our program. Stata/IC is the least expensive and sufficient version for your coursework. With a single-user license, you can install Stata on up to three computers. Description of all the flavors are given here:

<http://www.stata.com/products/which-stata-is-right-for-me/>

You can obtain Stata at discounted rates through the Campus GradPlan, in which University of Maryland, College Park is a participating institution. To benefit from the discounted prices, click on the link below and pick the Stata version you would like to buy.

(Note: Disregard the warning at the top which states that you must be a faculty or staff member. That is not correct.)

<http://www.stata.com/order/new/edu/gradplans/campus-gradplan/>

Through the Campus GradPlan you can buy either an annual (\$89 for Stata/IC) or a perpetual license

(\$198 for Stata/IC). The perpetual license does not expire and is the most cost effective option assuming that you will stay in the program for at least 15 months. There are also upgrade discounts provided to perpetual license holders. During the checkout process you will be asked to verify your “@umd.edu” email address.

If you wish to buy a 6-month license (\$45 for Stata/IC), you need to order it as a regular student using the following link:

<https://www.stata.com/order/new/edu/gradplans/student-pricing/>

During the checkout process you will be asked to upload a copy of your student ID or another document as a proof of your enrollment.

### **Grading and assignments (% of grade)**

Written memo: due July 18 (10%)

Online discussions: due weekly (5% total)

Problem sets: due June 20 and August 1 (20% total)

One paper presentation: June 20 - August 8, as discussed during first class (10%)

Midterm exam: June 27 (20%)

Final exam: August 15 (35%)

### *Details*

**Problem sets:** During class, we will frequently work through program evaluation problems in Stata. Organized along similar lines, two assigned problem sets will give you independent practice working through the basic econometric evaluation estimators and how they are implemented in Stata using real data. You be asked to estimate econometric models and interpret the results. It is expected that you have a basic understanding of Stata from your previous econometrics courses, and that you are able to utilize Stata help files to learn new code. Your grade will depend both on whether you estimate what you are asked to estimate correctly and how well you interpret the results. Both of these are valuable skills.

You may work together on the problem set, but each student must turn in his or her own version of the assignment. The problem set and the written memos will be submitted via ELMS using the “Submit Assignment” button on the relevant assignment’s page and uploading the required file(s). Please contact the TA via email if you encounter any problems. For the problem set, you should turn in two separate documents: one that contains your typed answers to the problem set questions, and another that consists of a well-organized and well-commented Stata log file.

The following books provide useful references for Stata. However, it is entirely possible to learn the necessary Stata code on one's own with resources available online.

Mitchell, Michael N. 2010. *Data Management Using Stata: A Practical Handbook*, Stata Press.

Acock, Alan. 2008. *A Gentle Introduction to Stata*, 2nd Edition. College Station: Stata Press.

**Online discussions:** I will post a question or series of questions relevant to the course material every Wednesday evening. The discussion will be open until Sunday at noon for you to comment/respond. I will check in to participate/respond/redirect. To fulfill this requirement, you may either create your own post in response to my prompt, or else write a substantive response to another student’s post that contributes to the discussion.

**Written memo:** Every day, findings from studies and evaluations are reported in the popular press. In

an attempt to generate headlines, the press often turns to evaluations based on very weak research designs. The objective of this assignment is to challenge you to be a critical consumer of research findings. It is healthy to approach articles as though the basic claims being stated are wrong, and to think of ways to debunk the claims being made. The assignment asks you to write a two page memo assessing the findings of a recent program evaluation study. This should consist of a concise summary and critique of a study reported on in popular press (e.g., New York Times, Washington Post, or the Wall Street Journal). This critique should be based solely on the description in the article, not on the original research. Assume that you work for the Secretary of a branch of government under whose purview this program or policy would fall. For example, if you select an article on tax policy, you would be writing a memo for Jack Lew. The memo should have four sections: objective of the study, design of the study, findings from the study, and critique. The first three sections should be very short (half a page to a page). The majority of the memo should focus on the weaknesses of the study. A copy of the article must be also be submitted with the memo. Note that, while your critique should only be based on the news article's description, you must choose a news article that offers sufficient opportunity to describe and critique a study *using concepts taught in this course*.

**Paper presentation:** You will each formally discuss a single paper. There will be two discussants per paper. The discussant remarks should resemble those at academic conferences, and we will discuss what this means. Discussant remarks should last no more than 12 minutes per discussant. Following the formal discussant remarks, there will be a (guided as lightly as possible) discussion of the paper. It is advisable that you start preparing for the formal discussant remarks well in advance, in case you have questions about the economics or the econometrics of the paper you are assigned to discuss. The papers for presentation, along with assignment dates, will be announced later.

### **Calculation of final grades:**

Each graded course component will (problem sets, exams, memos, course presentations, and discussion sessions) will be graded out of 100 points each. The discussion grade will be computed as the average of your discussion grades over the course.

Your final numerical course grade will be calculated by taking a weighted average of these grades, where (as stated above) the written memo has a 10% weight, the online discussion component has a 5% weight, the two problem sets each have a 10% weight, the online presentation has a 10% weight, the midterm exam has a 20% weight, and the final exam has a 35% weight.

At the end of the term, every student will then have a numerical course grade between 0 and 100. I will decide upon the numerical cutoffs between various *letter* grades based on my professional judgement and the distribution of numerical grades. I will also consider absolute standards of academic success. Students who demonstrate clear mastery of course material will get A grades. Students who demonstrate only partial understanding will get B grades. Students who do not demonstrate understanding of the core material will receive B-'s or below. The cutoffs that I use will respect the ordinal ranking of numerical course grades. In other words, letter grades will always be the same or higher as numerical course grades increase.

**Schedule of Topics** (subject to change):

1. Introduction to the course; How to discuss a paper; Evaluation institutions (May 30)

Angrist and Pischke, Chapter 1 and 2

2. Introduction to evaluation methods; Experimental design (June 6)

Burtless, Gary (1995). "The Case for Randomized Field Trials in Economic and Policy Research," *Journal of Economic Perspectives*. 9 (2): 63-84.

3. Experimental design and applications (June 13)

Katz, Lawrence F., Jeffrey R. Kling, and Jeffrey B. Liebman (2001). "Moving to Opportunity in Boston: Early Results of a Randomized Mobility Experiment," *Quarterly Journal of Economics* (May): 607-654.

Chetty, Raj, Nathaniel Hendren, and Lawrence Katz (2015). "The Effects of Exposure to Better Neighborhoods on Children: New Evidence from the Moving to Opportunity Project," *American Economic Review*, forthcoming.

4. Introduction to quasi-experimental design; Regression (June 20)

Angrist and Pischke, Chapter 3

Card, David (1990). "The Impact of the Mariel Boatlift on the Miami Labor Market", *Industrial and Labor Relations Review* 43: 245-57.

Course presentations begin today and end on August 8.  
First problem set due at the beginning of class.

5. MIDTERM EXAMINATION (June 27)

6. Instrumental variables (July 5 Note that this meeting is on Thursday, rather than Wednesday)

Angrist and Pischke, Chapter 4

Basu, Coe, and Chapman (2017). "Comparing 2SLS vs 2SRI for Binary Outcomes and Binary Exposures." NBER Working Paper #23840 (only need to read pages 1-12).

Bound, John, David Jaeger, and Regina Baker (1995). "Problems with Instrumental Variables Estimation When the Correlation Between the Instruments and the Endogenous Explanatory Variable is Weak," *Journal of the American Statistical Association* 90: 443-50.

7. Before-after estimation and difference-in-differences (July 11)

Angrist and Pischke, Chapter 5

Card, David and Alan Krueger (1994). "Minimum Wages and Employment: A Case Study of the Fast Food Industry in New Jersey and Pennsylvania." *American Economic Review* 84

(4): 772-93.

8. Difference-in-differences; Program theory and cost-benefit analysis (July 18)

Smith, Jeffrey and Arthur Sweetman. 2010. "[Putting the Evidence in Evidence-Based Policy](#)" in Productivity Commission (ed.), *Strengthening Evidence Based Policy in the Australian Federation, Volume 1: Proceedings*. Canberra: Productivity Commission, 59-102.

Memo due at beginning of class.

9. Matching and synthetic control (July 25)

Dehejia, Rajeev and Sadek Wahba (1999). "Causal Effects in Nonexperimental Studies: Reevaluating the Evaluation of Training Programs," *Journal of the American Statistical Association* 94, no. 448: 1053-62.

Jones, Damon and Ioana Marinescu (2018). "The Labor Market Impacts of Universal and Permanent Cash Transfers: Evidence from the Alaska Permanent Fund." NBER Working Paper #24312.

10. Synthetic control; Regression discontinuity (August 1)

Angrist and Pischke, Chapter 6

Battistin, Erich, Agar Brugiavini, Enrico Rettore, and Guglielmo Weber (2009). "The Retirement Consumption Puzzle: Evidence from a Regression Discontinuity Approach," *American Economic Review* 99 (5): 2209-26.

Second problem set due at the beginning of class

11. Regression discontinuity; Review (August 8)

12. FINAL EXAMINATION (August 15)