COURSE SYLLABUS
Master of Science Program in Applied Economics
University of Maryland, College Park
Washington, DC location: 1400 16th St, NW, suite 140
ECON 645, Spring 2021

Empirical Analysis III: Econometric Modeling and Forecasting - Online

Class Meets: Online, Mondays 6:45-8:15pm (online lecture) and 8:30-9:30pm (Group Stata exercises or online presentations)

Instructor: Moises Yi
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Instructor Office Hours: Tuesdays 5:30-6:30pm

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TA Office Hours: Saturdays 10-10:45am

Pre requisites: ECON 644

Course description: This is a course in applied econometrics, emphasizing the implementation of modern econometric techniques to analyze concrete economic problems, using real data and recent econometric software. Though not a theoretical course, we will introduce some basic theory and concepts to motivate an appropriate use of the methods.

Our program has 7 general learning objectives:

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, 6, and 7

At the end of the course, you should be able to build, estimate and interpret your own econometric models for concrete economic problems, write professional reports/papers using econometric methods, use STATA software for econometric and statistical analysis, and understand empirical papers in the field of economics and gain sense of what makes an empirical paper convincing.

Overview of course/lecture structure:

This will be an online course. We will be using Zoom as a conferencing tool. You can find information on the various ways to access this tool here: [UMD Division of IT Information on Zoom](#)

Each Monday, we will hold synchronous ("real time") lectures through Zoom. Lectures will be divided into two parts:

1. During the first hour and a half (6:45-8:15pm) we will hold a regular lecture (introducing new concepts and material). This lecture component will rely heavily on slides, all of which will be posted on ELMS. When necessary, I will complement these lectures with additional materials, such as pre-recorded segments or readings, in order to answer questions/clarify concepts, provide additional examples, or to cover material that was not covered during lecture due to time constraints.
2. The second part (8:30-9:30pm) will consist of either student presentations (more details on this below), or hands-on programming and Stata exercises (performed in small groups with my guidance). As you will see from the course schedule below, student presentations will take place roughly every other week. Weeks with no student presentations will be weeks in which we will work on hands-on programming in the second part of the class.

Textbooks and Software:
Required:
- Introductory Econometrics: A Modern Approach, 7th edition, Jeffrey M. Wooldridge. (2018)
- Data Management Using STATA: A practical Handbook, Michael N. Mitchell (2010 or 2020)
- Copies of the syllabus, lecture notes, problem sets and other relevant documents will be made available through the course website.
- We will use STATA for the empirical analysis. You can order a student version which is discounted. Information on how to order STATA is available on the last page of this syllabus.

Recommended:
- Mostly Harmless Econometrics: An Empiricist's Companion, Angrist and Pischke (2009)
- Introduction to Econometrics by James H. Stock and Mark W. Watson, 4th Edition
- Microeconometrics using STATA, Cameron and Trivedi (2009)

Grading:
- Midterm Exam: 20%
- Final Exam: 35%
- Problem sets 1-4: 15%
- Paper presentation: 15%
- Online Discussion Sessions: 15%

Midterm and Final Exams:
Exams will take place on the dates listed on the schedule below. On the dates of the exams, we will meet online at 6:45pm (at which time you will gain access to the exam on ELMS). I will provide you with instructions during the first 5 minutes. The exams will take two hours, each starting promptly at 6:50pm and with the solutions due at 8:50pm (all solutions will be submitted through ELMS). During the intervening time, I will be available online to answer questions about the exams.

Exams will be open-book open-note, but communications with anyone other than myself (the professor) are prohibited during the designated times. Both exams are cumulative and will consist of two sections: a theoretical/short question section and an empirical exercise section (which will require Stata).

Note that you should treat these as you would any other (in-person) exam. It is your responsibility to make sure you are available on the exam dates.

Problem Sets:
The problem sets will include theoretical problems and empirical assignments. You will have 1-2 week(s) to solve each problem set. I encourage you to discuss the problems with your classmates. From my experience as a student, you can learn a great deal from your fellow students. However, after discussing problems, you should solve the problems on your own. Joint assignments will not be graded.

All problem sets are to be submitted electronically as STATA log files on ELMS and are due before class on Mondays at 6.45pm. Since answers are posted on ELMS right after the deadline, LATE submissions are not acceptable.

Paper Presentations:
Students in teams of 2-3 will chose one research paper that is related to one the topics covered in the course. You will be able to sign up for specific slots online after our first lecture (a google sheet link will be posted on ELMS at 9:30pm on 3/1/21 – it will work on a first-come first-serve basis).

Your job is to create a 15-20 minute presentation describing the paper, focusing the bulk of the time explaining what econometric techniques were used in their "main" regression, and if possible critiquing the technique used based on what we've covered in the course to that point. Presentations will be scattered throughout the course; please see the schedule below for more information on the dates. Students can choose between live presentations or submitting pre-recorded presentations. Either way, the entire class will watch the presentations and discuss the presentations during the second portion of the class (8:30-9:30pm, on the relevant Mondays). Regardless of your choice of live vs. prerecorded presentations, you need to send me a draft of your slides no later than 8pm of the Thursday preceding your presentation due date. I will write back with feedback which should be incorporated into the final presentation, generally by Saturday evening. If your team opts for a pre-recorded presentation, I need to receive your presentation by 6pm on the day of your presentation (the following link is a useful resource on recording PowerPoint presentations:
https://umd.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=0a03e208-fa5d-4518-933e-ab8a001b245d).

Online Discussions:
I will post a question/series of questions relevant to the course material and/or student presentations every Wednesday at 9am. The discussion will be open until Friday at 1pm for you to comment/respond. I will check in twice a day to participate/respond/redirect. On weeks that feature student presentations, students are encouraged to submit questions/observations related to the presentations to me by 9pm on Tuesday. I will then open discussion threads based on your questions/suggestions.

Please note that given our compressed schedule, online discussions play an integral part of the course. The online discussion component of the course will be graded on a scale of 0-15 points, which will account for 15% of your final grade. **Everyone is required to participate.** Non-participation will result in an automatic 1 point deduction (out of a total of 15 points) for each week you fail to participate.

Final Course Grades
Students' grades on each component of the course will be weighed according to the scale above to calculate their numerical course grade. The numerical course grades will be translated into letter grades as follows:
93-100 A   90-92 A-
89-80 B+ 70-79 B 60-69 B-
50-59 C+ 40-49 C 30-39 C-
20-29 D+ 10-19 D 0-9 F
The grade A+ is reserved for the top student or two in the course (or maybe no one) – at the instructor's discretion.

Tentative Course Outline:
- Mar 1: Introduction, Endogeneity, Omitted Variable Bias, Instrumental Variables (Wooldridge Chapter 3.3, 9.4, 9.5, 15.1)
- Mar 8: Instrumental variables and 2SLS (Wooldridge Chapter 15.1-15.5; Mitchell 2010 Ch. 2, 3, and 9.3 (or Mitchell 2020 Ch. 2, 3,4 and 10.3))
- **Mar 15: No class due to Spring Break**
- Mar 22: Panel Data I (Wooldridge Chapter 13, 14.1, Mitchell 2010 Ch. 5.1-5.7 (or Mitchell 2020 Ch. 6.1-6.7))
  - o **(Pset #1 Due)**
  - o Student presentations (2): IV
- Mar 29: Panel Data II (Wooldridge Ch. 14.1-14.3, and Mitchell 2010 Ch. 5.8-5.15 (or Mitchell 2020 Ch. 6.8-6.15))
- Apr 5: Review + IV and Panel STATA exercises (Mitchell 2010 Ch. 6 (or Mitchell 2020 Ch. 7))
  - o **(Pset #2 Due)**
  - o Student presentations (2): Panel Data
- **Apr 12: Midterm Exam**
- Apr 19: Natural Experiments and Difference-in-Differences (Mitchell 2010 Ch. 7 (or Mitchell 2020 Ch. 8))
- Apr 26: Difference-in-Differences
- May 3: Limited Dependent Variables I (Wooldridge Ch. 7.1, 7.5, 17.1), including multivariate/dummy regression analysis and interpretation.

- o **(Pset #3 Due)**
  - o Student presentations (2): Diff-in-Diff
- May 10: Limited Dependent Variables II
- May 17: Intro to Time Series (Wooldridge Ch. 10-11)
  - o **(Pset #4 due)**
  - o Student presentation (1): Probit/Logit
- **May 24: Final Exam**

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. You will need to use your University of Maryland "directory ID" and password.

Email: The University has adopted email as 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.registrar.umd.edu/current/ (Under the first major heading of "Online Transactions" there is a link to "Update Contact Information".)

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 DC 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 DC 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. You should inform yourself about the UMD policies related to academic misconduct: https://www.studentconduct.umd.edu/home/current-students
Cases of academic misconduct, including plagiarism and giving or receiving unauthorized assistance on exams, will be referred to the UMD Office of Student Conduct. If found responsible for academic misconduct, students can be subject to sanctions. The standard sanction for graduate students found responsible for cheating on exams is expulsion from the university.

Student Conduct: Students are expected to treat ech 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 week of the term 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.

Academic Progress: The UMD 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 enrolled 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.

Laptop Computer Requirement: Completing some of this course's requirements will require a laptop computer (not a notebook or a tablet!) with at least 1 GB of RAM and at least 5 GB of free space available on the hard-drive. We recommend laptops with a 15-inch screen. Screens smaller than 13 inches are probably not practical.

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 thecourseworkinourprogram.Stata/ICistheleastexpensiveandsufficientversionforyourcoursework. Witha 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.